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ABSTRACT

In 1989-90 three Congressional hearings received testimony on the need for modern telecommunications infrastructure in rural areas and the ways such infrastructure could foster rural economic development. A researcher on rural development reported findings that deregulation policies had removed incentives for telecommunications companies to serve rural areas, and that government assistance in rural telecommunications development would be necessary for rural areas to have equal access to information services and to compete in the national economy. Testimony by Congressmen and representatives of telecommunications companies and federal and state regulatory agencies discussed: (1) competition versus monopoly in public utilities, and the effects of each on the consumer; (2) the Rural Electrification Administration's Telephone Loan Program and rural cooperatives; (3) improving rural educational opportunities through telecommunications technology; (4) regulation of cable television companies; (5) the conditions under which rural customers receive telecommunications services; and (6) specific recommendations for legislation. An extensive presentation by Bell Atlantic describes how a public broadband network integrating audio, visual, and computer technologies could affect the everyday lives of future American consumers. (SV)

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BRINGING THE INFORMATION AGE TO RURAL AMERICA

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HEARINGS

BEFORE THE

GOVERNMENT INFORMATION, JUSTICE, AND AGRICULTURE SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

ONE HUNDRED FIRST CONGRESS

FIRST AND SECOND SESSIONS

JUNE 14; OCTOBER 12, 1989; AND FEBRUARY 7, 1990

Printed for the use of the Committee on Government Operations

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BRINGING THE INFORMATION AGE TO RURAL AMERICA

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[2] Appointed to subcommittee November 16, 1989.
[3] Appointed to subcommittee November 16, 1989.
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CONTENTS

Page

Hearings held on:

- June 14, 1989 ... 1
- October 12, 1989 ... 177
- February 7, 1990 ... 245

Statement of:

- Boucher, Hon. Rick, a Representative in Congress from the State of Virginia ... 190
- Bresnan, William J., president, Bresnan Communications Co., representing the National Cable Television Association ... 324
- Coleman, Hon. Thomas, a Representative in Congress from the State of Missouri ... 192
- Collins, A. Gray, Jr., senior vice president, external affairs, Bell Atlantic, representing the U.S. Telephone Association ... 56
- Cooper, Hon. Jim, a Representative in Congress from the State of Tennessee ... 199
- Goatcher, Margaret, president, Cimarron Telephone Co., representing the Organization for the Protection and Advancemant of Small Telephone Companies ... 149
- Gregg, Billy Jack, director, consumer advocate division, West Virginia Public Service Commission ... 247
- Greytok, Marta, chairman, Public Utility Commission of Texas, representing the National Association of Regulatory Utility Commissioners ... 17
- Griffith, Boyce, chairman, Public Service Commission of West Virginia ... 31
- Gunderson, Hon. Steve, a Representative in Congress from the State of Wisconsin ... 184
- Kimmelman, Gene, Legislative Director, Consumer Federation of America ... 263
- Kislak, Jonathan I., Deputy Under Secretary, Small Community and Rural Development, accompanied by Jack Van Mark, Acting Administrator, Rural Electrification Administration; and Neal Sox Johnson, Acting Administrator, Farmers Home Administration ... 210
- Lein, Kenneth L., general manager, Winnebago Cooperative Telephone Association, representing the Organization for the Protection and Advancement of Small Telephone Companies ... 294
- Maher, William F., Associate Administrator, Office of Policy Analysis and Development, National Telecommunications and Information Administration ... 347
- Parker, Edwin B., president, Parker Telecommunications ... 3
- Robinson, Kenneth, Senior Advisor to the Chairman, Federal Communications Commission ... 362
- Sampson, Curtis A., president and chief executive officer, Communications Systems, Inc., representing National Rural Telecom Association ... 162
- Skelton, Hon. Ike, a Representative in Congress from the State of Missouri ... 177
- South, Gene, executive vice president, Panhandle Telephone Cooperative, Inc., representing U.S.Telephone Association ... 304
- Thomas, Hon. Craig, a Representative in Congress from the State of Wyoming ... 206
- Welch, Dwight, general manager, Hardy Telephone Co., representing the National Telephone Cooperative Association ... 45
- Wise, Hon. Robert E., Jr., a Representative in Congress from the State of West Virginia, and chairman, Government Information, Justice, and Agriculture Subcommittee: Opening statement ... 1

Page

Letters, statements, etc., submitted for the record by:
- Bresnan, William J., president, Bresnan Communications Co., representing the National Cable Television Association: Prepared statement 329
- Coleman, Hon. Thomas, a Representative in Congress from the State of Missouri: Prepared statement 195
- Collins, A. Gray, Jr., senior vice president, external affairs, Bell Atlantic, representing the U.S. Telephone Association:
  - Bell Atlantic study entitled "Deliverying the Promise" 58
  - Prepared statement 138
- Cooper, Hon. Jim, a Representative in Congress from the State of Tennessee: Prepared statement 202
- Goatcher, Margaret, president, Cimarron Telephone Co., representing the Organization for the Protection and Advancement of Small Telephone Companies: Prepared statement 152
- Gregg, Billy Jack, director, consumer advocate division, West Virginia Public Service Commission: Prepared statement, and survey of basic cable television rates 250
- Greytok, Marta, chairman, Public Utility Commission of Texas, representing the National Association of Regulatory Utility Commissioners: Prepared statement 21
- Griffith, Boyce, chairman, Public Service Commission of West Virginia: Prepared statement 34
- Gunderson, Hon. Steve, a Representative in Congress from the State of Wisconsin: Prepared statement 186
- Kimmelman, Gene, Legislative Director, Consumer Federation of America: Prepared statement 267
- Kislak, Jonathan I., Deputy Under Secretary, Small Community and Rural Development: Prepared statement 213
- Lein, Kenneth L., general manager, Winnebago Cooperative Telephone Association, representing the Organization for the Protection and Advancement of Small Telephone Companies: Prepared statement 298
- Maher, William F., Associate Administrator, Office of Policy Analysis and Development, National Telecommunications and Information Administration: Prepared statement 350
- Parker, Edwin B., president, Parker Telecommunications: Prepared statement 6
- Robinson, Kenneth, Senior Advisor to the Chairman, Federal Communications Commission:
  - Prepared statement 364
  - Submissions to Chairman Wise's questions 381
- Sampson, Curtis A., president and chief executive officer, Communications Systems, Inc., representing National Rural Telecom Association: Prepared statement 165
- Skelton, Hon. Ike, a Representative in Congress from the State of Missouri: Prepared statement 180
- South, Gene, executive vice president, Panhandle Telephone Cooperative, Inc., representing U.S.Telephone Association: Prepared statement 306
- Van Mark, Jack, Acting Administrator, Rural Electrification Administration: Authority for REA electric borrowers to invest funds, make loans, or loan guarantees 221
- Welch, Dwight, general manager, Hardy Telephone Co., representing the National Telephone Cooperative Association: Prepared statement 48

APPENDIX

Prepared statement of David Herron, manager, West Carolina Rural Telephone Cooperative 393

BRINGING THE INFORMATION AGE TO RURAL AMERICA

WEDNESDAY, JUNE 14, 1989

House of Representatives,
Government Information, Justice,
and Agriculture Subcommittee
of the Committee on Government Operations,
Washington, DC.

The subcommittee met, pursuant to notice, at 1 p.m., in room 2247, Rayburn House Office Building, Hon. Robert E. Wise, Jr. (chairman of the subcommittee) presiding.

Present: Representatives Robert E. Wise, Jr., Glenn English, Al McCandless, and Steven Schiff.

Also present: Lee Godown, staff director; Audrey A. Bashkin, professional staff member; Susan Chadderdon, clerk; and Brian Lockwood, minority professional staff, Committee on Government Operations.

OPENING STATEMENT OF CHAIRMAN WISE

Mr. Wise. The Government Information, Justice, and Agriculture Subcommittee will come to order.

The title of this hearing is Bringing the Information Age to Rural America.

Recent years have brought major changes to the telecommunications industry. The breakup of the Bell System has transformed the way we think about the telephone network and the way we regulate telecommunications providers. During the same period, we have witnessed the advent of technological miracles such as satellite, optical fiber, and microwave transmission. Many of us have come to regard fax machines, personal computers, and computerized data bases as essential tools of the workplace.

But not all of us. For some rural Americans, single line telephone service is still not yet a reality. Because of the comparative expense of bringing new telecommunications services to smalltown America, there is a danger that it will be many years before the entire country will fully enjoy the technological advances of recent times.

As a Nation, we can't afford to let the information age pass rural America by. While the telecommunications industry has been booming, small town America has been in a state of decline. The rural economy has shifted away from its traditional mainstays—agriculture, mining, and manufacturing—and turned instead to service industries. Deregulation of the transportation industry has meant that buses and trucks run less often—actually they don't run at all—in rural parts of the country and make fewer stops. Rail and air travel have become much more costly. As a result, residents are leaving the less populous regions of America to make their fortunes in our increasingly congested and polluted metropolitan areas.

Bringing the information age to rural America sooner rather than later is a major key to reversing this trend. Modern telecommunications can help replace the buses, trucks, and trains that pass the small towns by. It can allow businesses, such as mail order companies and airline reservation services, to locate in rural areas. And it can make sophisticated educational and medical services available throughout the countryside.

In my own experience, I note modern telecommunications can mean a source of many, many new jobs because we do have the capacity to be the reference center, the airlines reservation center. Indeed, in our area, our major telephone company is now providing directory information service for the Washington, DC area. When you call to get that number, you are talking to an operator in West Virginia. So the rural areas of our country have much to offer, assuming we can build that telecommunications infrastructure that is so vital.

In some cases, we may be able to pass by the highways to continue with the roads we have and not depend on massive highways coming to our area as long as we have a modern telecommunications structure. Incidentally, we would still like the highways also. We won't be able to touch upon all the issues today, but in this hearing and others to follow, we will be examining some of the more significant problems, looking at the regulatory climate, and addressing sometimes conflicting policy concerns.

We will hear first from Dr. Edwin Parker, coauthor of the newly published Aspen Institute study entitled "Rural America in the Information Age: Telecommunications Policy for Rural Development." Next, we will have testimony from the chairmen of the Texas Public Utility Commission and the West Virginia Public Services Commission. And last, we will hear from spokespersons for the four major associations that represent rural telecommunications concerns.

I want to express my appreciation to those of you who have come, some of you, from long distances. I want to apologize in advance because I suspect this hearing will be broken up from time to time by votes on the floor which will be necessary to go to, but we look forward to having a good hearing.

Mr. McCandless, any statements?

Mr. McCandless. Thank you, Mr. Chairman. I do not have an opening statement. I welcome our panel and look forward to their testimony.

Mr. Wise. Thank you.

Mr. Wise. The first witness then will be Dr. Edwin Parker with Parker Telecommunications. Dr. Parker, if you would care to take your place at the witness table. Before you sit down, if I could swear you in.

[Witness sworn.]

Mr. **Wise**. Thank you very much. Please proceed. Dr. Parker, in your case, as with all witnesses, your written testimony is being made a part of the record. It will be printed as such, so please feel free to summarize.

STATEMENT OF EDWIN B. PARKER, PRESIDENT, PARKER TELECOMMUNICATIONS

Dr. **Parker**. Thank you. It is a pleasure to be here today.

My name is Ed Parker. I am president of Parker Telecommunications, a consulting firm in rural Oregon. I am a coauthor, as you said, of "Rural America in the Information Age: Telecommunications Policy for Rural Development," published by the Aspen Institute and University Press of America. That report was sponsored and paid for by the Ford Foundation with support from the rural economic policy program of the Aspen Institute.

What I would like to do is just summarize briefly some of the comments and conclusions in that report. Rural America, as you know, has been in economic distress through most of this decade. Rural jobs in agriculture, mining and manufacturing have been in decline. Only 9 percent of rural jobs are now in agriculture. Service jobs have been increasing and now account for 65 percent of rural jobs.

However, the rural service sector is growing at only two-thirds of the rate of the urban areas. Further, the service jobs in rural areas are mostly in wholesale and retail trade, private services and Government, primarily local school systems. In contrast, the urban areas are capturing a disproportionate share of the producer and export services which have the greatest potential for economic growth.

Modern telecommunications infrastructure is one key to rural economic development. I say one key because it is not a panacea, we do need other things also.

The ability to attract traditional industries, as well as footloose businesses not dependent on geographic location, such as software development, telemarketing, mail order financial services, some of the things that you cited in your remarks, are increasingly dependent on modern telecommunications, including touch tone digital service, facsimile transmission, and data services.

Communities with access to these modern services have opportunities for survival and growth. Those without are doomed to economic stagnation and decline.

Telecommunications networks are today's highways. They offer development opportunities to rural areas that railroads and highways once brought. Rural areas not integrated into a modern digital telecommunications network will suffer the same economic fate as towns bypassed by the Federal highway system.

By thinking of telecommunications systems as highways, we can illustrate the extent to which rural areas are falling behind. Nearly 12 percent of rural households have no roads at all, that is no telephone service; another 7 percent have only multiparty service incapable of accessing modern telecommunications services, which is like having a dirt road suitable only for an all terrain vehicle. Approximately 12 percent of rural telephone lines are below the specifications set by the Rural Electrification Administration. These lines can be thought of rural electronic highways with pot holes making them questionable for fax machines and data modems.

Most rural single party service does not yet have the touch-tone service which we take for granted, and is essential for most business information transactions. Currently only 30 to 35 percent of rural communities have access to digital services made possible by replacing the old analog switches, with modern digital switching capability. The remaining 65 to 70 percent could be upgraded by the year 2000 with a modest increase in Federal loan programs and some changes in regulatory policy.

Providing digital information access would be like upgrading narrow, winding two lane roads to modern interstate highways over which the economic transactions of the information age take place. If the rural areas are to prosper or in some cases even survive, telecommunications facilities suitable for reliable facsimile and data transmission, as well as voice, are absolutely essential.

Rural telecommunications infrastructure fell behind as urban areas leaped forward into the information age for a variety of reasons, many related to the dramatic changes in the telecommunications regulatory environment.

National telecommunications policy continues to move toward less regulation and more competition. In urban areas, competitive telecommunications services ranging from competitive long-distance carriers to easy access to fax machines for rapid document delivery have mushroomed, but the new competition did not bring these changes to rural communities.

Under the prior regulatory structure, rural areas benefited from nationwide rate averaging and the resulting subsidy from interurban and long-distance service. Now most rural areas don't have competitive long-distance services or the other benefits of competition, but they do share the higher phone prices, the access charges that were part of that regulatory change, and they are vulnerable to higher prices and relatively lower quality because each piece of the telecommunications business is now under pressure to stand on its own.

Small rural carriers surviving on the fringes of the national telephone network compare their plight to the last person in the children's game of "crack the whip," policies which ripple past those in the middle of the market have whiplash effects on those at the end.

The Federal telecommunications policy goal of the past 50 years, universal telephone service, is nearly fulfilled. It is now time to change that goal to universal information access. Information services are among the fastest growing segments of the United States and the global economy. Reliable, efficient access to information services are increasingly critical to the success of any economic enterprise. Rural areas without access are doomed to be uncompetitive; rural areas with efficient access to the same information services available in urban areas can bridge the traditional, rural barrier of distance and compete on a level field with urban businesses.

Our report concluded that government assistance in rural telecommunications development is needed at this time for three reasons. First, to achieve improved economic performance in rural areas by providing a basic infrastructure necessary for development.

Second, to help rural America adjust to the new telecommunications marketplace by way of special transition policies; and, third, to empower rural communities with an equal opportunity to compete in the national economy.

To help rural areas achieve parity with presently available urban services by the year 2000, our report recommended two major actions: One, a 30 percent increase in Rural Electrification Administration telephone loan funds to assist small independent rural telephone carriers to upgrade their facilities; and, second, we suggested that regulatory incentives are also needed to help the Bell operating companies and the larger independents so they could be encouraged and motivated to upgrade their telephone infrastructure in their rural service areas.

Thank you.

[The prepared statement of Dr. Parker follows:]

6

RURAL AMERICA IN THE INFORMATION AGE

Statement of

Edwin B. Parker

Prepared for hearing on telecommunications issues affecting rural America.

Government Information, Justice, and Agriculture Subcommittee of the House of Representatives Committee on Government Operations.

Representative Bob Wise of West Virginia, Chairman.

RURAL AMERICA IN THE INFORMATION AGE

Edwin B. Parker

June 14, 1989

I. Qualifications

My name is Ed Parker. I am president of Parker Telecommunications, a consulting business located in the rural community of Gleneden Beach, Oregon. I am a co-author of the recent report, "Rural America in the Information Age: Telecommunications Policy for Rural Development," published by the Aspen Institute and University Press of America.

Previously, I was president of the Data Networks Division of Contel ASC, a unit that included the former Equatorial Communications Company. I had co-founded Equatorial in 1979 and was its president and chief executive officer prior to its merger with Contel in 1987.

From 1962 to 1979 I was a professor of Communication at Stanford University, where I specialized in studies of the social and economic effects of information technology. I taught at the University of Illinois from 1960 to 1962. I have co-authored or co-edited four books and more than 75 professional articles. I graduated from the University of British Columbia in 1954 and received my Ph.D. from Stanford University in 1960.

II. Rural America is in Trouble

I would like to summarize today some of the highlights of the report, "Rural America in the Information Age." Rural America has been in economic distress through most of this decade. Rural jobs in agriculture, extraction industries and manufacturing have been in decline. Only nine percent of rural jobs are now in agriculture. Services jobs have been increasing and now account for 65 percent of rural jobs. However, the rural services sector is growing at only two-thirds the rate of urban areas. Further, the service jobs in rural areas are mostly in wholesale and retail trade, private services and government--primarily local school systems. In contrast, urban areas are capturing a disproportionate share of the producer and export services which have the greatest potential for growth.

III. Telecommunications is a Key to Economic Development

Modern telecommunications infrastructure is one key to rural economic development today. The ability to attract traditional industries, as well as "footloose" businesses not dependent on geographic location, such as software development, telemarketing, mail order and financial services, are increasingly dependent on modern telecommunications, including touch tone digital telephone, facsimile and data services. Communities with access to these modern services have opportunities for survival and growth; those without are doomed to economic stagnation and decline.

Telecommunications networks are today's highways. They offer development opportunities to rural areas that railroads and highways once brought. Rural areas not integrated into a modern digital telecommunications network will suffer the same economic fate as towns bypassed by the federal highway system.

By thinking of telecommunications systems as highways, we can illustrate the extent to which rural areas are falling behind. Nearly 12 percent of rural households have no roads at all--no telephone service. Another seven percent have only multiparty service incapable of accessing modern telecommunications services, which is like having only a dirt road requiring an all-terrain vehicle and unsuitable for ordinary automobile traffic. Approximately 12 percent of rural telephone lines are below specifications set by the Rural Electrification Administration. These lines can be thought of as rural electronic highways with potholes making them questionable for fax machines and data modems.

Most rural single party telephone service does not offer the touch tone digital service that is taken for granted in urban areas and is essential for most business information transactions. Currently only about 30 percent of rural communities have access to the digital information services made possible by replacing old analog telephone switches with modern digital switching capability. The remaining 70 percent could be upgraded by the year 2000 with a modest increase in federal loan programs and changes in regulatory policy. Providing digital information access would be like upgrading narrow winding two-lane roads to modern interstate highways over which the economic transactions of the information age take place. If rural areas are to prosper or even survive, telecommunications facilities suitable for reliable facsimile and data transmission as well as voice are essential.

Rural telecommunications infrastructure fell behind as urban areas leaped forward into the information age for a variety of reasons, many related to the dramatic changes in telecommunications regulatory environment. National telecommunications policy continues to move toward less regulation and more competition. In urban areas competitive telecommunications services ranging from competitive long distance carriers to easy access to fax machines for rapid document delivery, mushroomed. But the new competition did not bring these changes to rural communities.

Under the prior regulatory structure, rural areas benefited from nationwide rate averaging and the resulting subsidy from inter-urban long distance services. Now, most rural areas don't have competitive long distance services or other benefits of competition, but are vulnerable to higher prices and relatively lower quality because each piece of the telecommunications business is now under pressure to stand on its own. Small rural carriers, surviving on the fringes of the national telephone network, compare their plight to that of the last person in the children's game of "crack the whip"; policies which ripple past those in the middle of the market have exaggerated whiplash effects on those at the end.

IV. A New Goal for Telecommunications Policy

The federal telecommunications policy goal of the past 50 years, universal telephone service, is nearly fulfilled. It is now time to change that goal to universal information access. Information services are among the fastest growing segments of the U.S. and the global economy. Reliable, efficient access to information services are increasingly critical to the success of any economic enterprise. Rural areas without access are doomed to be uncompetitive; rural areas with efficient access to the same information services available in urban areas can bridge the traditional rural barrier of distance and compete on a level field with urban businesses.

Our report concluded that government assistance in rural telecommunications development is needed at this time for three reasons:

(1) To achieve improved economic performance in rural areas by providing a basic infrastructure needed for development,

(2) To help rural America adjust to the new telecommunications marketplace by way of special transition policies, and

(3) To empower rural communities with an equal opportunity to compete in the national economy.

To help rural areas achieve parity with presently available urban services by the year 2000, two major actions are required. A modest 30 percent increase in Rural Electrification Administration telephone loan funds is required to assist small independent rural telephone carriers to upgrade their facilities. Regulatory incentives also need to be given to Bell operating companies and larger independent telephone companies to encourage them to upgrade the telephone infrastructure in their rural service areas.

Mr. **Wise**. Thank you very much. We have been joined by the former chairman of this committee, Glenn English and Steven Schiff.

I would first ask Glenn and then Steve if you would like to make an opening statement.

Mr. **English**. Only that I believe these hearings are extremely important. The House Agriculture Committee is this month having hearings with regard to rural development. There is no question communications play an extremely important role in all that. I know of your interest, and certainly this subcommittee's interest, in that topic, and we applaud your efforts, Mr. Chairman, and that of the subcommittee in this work. It is certainly going to be beneficial to us; I know it is going to be beneficial to the whole question of telecommunications.

Mr. **Wise**. You taught us well, Glenn.

Mr. **English**. I don't know about that.

Mr. **Wise**. Mr. Schiff.

Mr. **Schiff**. Mr. Chairman, I just want to join in those remarks. I represent the Albuquerque, NM area. It is mostly urban, but I have rural areas in my district, and most of the rest of New Mexico, I think, could be correctly described as rural more than urban in nature. I thank you for having this hearing.

Mr. **Wise**. Thank you.

In your statement, you make the observation that nearly 12 percent of rural households have no telephone service at all, which struck me as being fairly high. I guess my first question is: Where does that data come from? My second question is: Is that a function of cost or unavailability of service? How would you break that out?

Dr. **Parker**. The source of the data was basically from the Federal Communications Commission, and your intuition is correct, of that number without telephones in rural areas, less than 10 percent don't have telephones because they couldn't get service. It just isn't there. More than 90 percent is a case of the problem of rural poverty, they can't afford telephones.

Mr. **Wise**. Have you seen any increase in the past 3 or 4 years in the number of families that are not, that do not have telephone service or may be perhaps turning a phone back as we have gone through this change in the telephone system?

Dr. **Parker**. On the contrary, I think that programs that the FCC has instituted in some of the States, lifeline service and the link-up America program of the Federal Communications Commission have helped to reduce the number of households without telephones.

Mr. **Wise**. You had mentioned needing a modest, I always liked the word, a modest increase in Federal loan funds. Having the privilege of sitting on the Budget Committee this year, I have learned even modest usually costs you a lot. What kind of dollars are you talking about?

Dr. **Parker**. We are talking about loan authorizations, an increase on the order of $150 million a year. But I think I should point out that those are loans, not grants, and in the more than 40-year program history of the REA telephone loan program, I don't believe there has been a single default. The history is good, the money gets paid back.

Mr. **Wise**. As opposed to what the House is taking up today in the savings and loan industry.

Your book talks about the chicken and egg problem of promoting rural communications and perhaps the question could be stated this way. Should we encourage the development of enhanced technologies in rural areas where demand does not currently exist in the hope that it will encourage economic development in those areas? What are your thoughts on that?

Dr. **Parker**. I would like to make two comments that indirectly answer that question. First, I have a colleague who is very experienced in rural development programs who likes to quote the old saying, "You can lead a horse to water, but you can't make it drink." The moral drawn from that is that in rural development programs you should look for thirsty horses. I submit that there are a large number of thirsty horses in rural America, there are a large number of independent telephone companies, cooperatives, and others who need support in getting access to the capital funds necessary to upgrade their telephone systems. There are a number of rural communities where the business people, the political communities understand they need better telecommunications, but they don't have it in their power to get it, and they are thirsty and they need help.

The second comment, if I may, is that I don't think there is a demand for high technology. People don't care abut digital switches. I think people care about the services. And people want, the large number of people want the services or want the jobs that the availability of that service can provide, and that's what we should focus on.

Mr. **Wise**. You said that about 30 percent of rural communities have touch-tone service. How much difference does that make?

Dr. **Parker**. Actually, I don't have completely accurate data on touch-tone service. As a surrogate for that and the other modern digital services, we did find data on digital switches and only approximately 30 to 35 percent have digital switches. A few more, but probably less than half the communities——

Mr. **Wise**. Would you be willing to recommend replacement by new digital switches? Do you think that is essential?

Dr. **Parker**. I would recommend the modernization in a way that gets the modern services there. I don't think we need to make the judgments as to which technology is appropriate as long as there is a way to get the service there.

If some of the software in the late model analog switches can be modified to provide new services, great. If there are ways to route the calls through a modern switch without having to replace the old one and still get the service there—the issue is to get the service to the constituents.

Mr. **Wise**. You are dealing with your present lay person. The difference between digital and analog—why is digital important? What services can it bring?

Dr. **Parker**. I think we have lived for a long time with touch-tone services, for example, just take it for granted without even realizing it. It is like the air we breathe. We make a phone call, and sometimes we don't even realize the voice on the other end of the phone wasn't a human being but it was a computer answering the company switchboard, saying punch "1" if you want customer service, punch 2 if you want personnel, punch the extension if you know it." You use it when you are entering into a number of transactions. We just use that all the time and don't even realize it.

I use it to call my answering machine so that I can find out what messages I have in Oregon when I am traveling. I think small businesses require that kind of service. We require the call-waiting service so that when we are on the line we can hear there is another incoming call. We need the call-forwarding service to forward the calls after hours from our office to our homes.

Mr. **Wise**. Are the digital switches also necessary for operation of faxes, modem, data transfer?

Dr. **Parker**. Not if the line quality is good enough. If the line quality is good enough and the switches don't introduce bursts of noise, then if the quality is good enough, digital switching isn't absolutely essential.

Mr. **Wise**. My 5 minutes has expired.

Mr. McCandless.

Mr. **McCandless**. Thank you, Mr. Chairman.

I am going to take a little different line of questioning here. Having come up through the local government chain and having to provide services to rural areas, or attempting to provide service in rural areas, the population density becomes an important factor in providing any kind of service. The way I could take your statement here is that if you are 50 miles from the nearest city, you or the government or some regulatory power should provide a level of service equal to that of downtown Manhattan, Los Angeles, or Chicago. Now that's the general flavor I am getting of your statement. Am I in error?

Dr. **Parker**. No, I am not recommending that there is an entitlement program the Government should give the rural people the exact same service that is available in urban areas, but I do think that we have a number of rural small-town governments and telephone companies who are trying to find a way to make that playing field more level, and I think giving some modest support is a way to help.

Mr. **McCandless**. We have something one refers to as economic feasibility. If you have a limited subscribership to the phone company, for example, it becomes very difficult to capitalize what is necessary to bring that phone system up to what it is I think we are talking about here, and to even service a debt at a lower interest rate because of the lack of subscribers. How do you get around something like that?

Dr. **Parker**. I think in some cases where the rural community and its telephone company just don't have the resources to pay for the debt, I believe they would not apply for the REA loan in the first place. It is not like we are requiring every single community to have it whether they want it or not. This is recommended as a program that helps those who do want it and need it to give a helping hand.

Mr. **McCandless**. We have—and I must become regional here, Oregon has a favorite slogan, "Don't come to Oregon, go to California," or words to that effect, which means in plain English, not Glenn's English, but plain English, we have enough people, we have enough growth, we don't need any more, we want to retain the life style that we have.

Mr. **Schiff**. Except on vacation. They invite you on vacation.

Mr. **McCandless**. We always like fresh green money from down South.

They enjoy their milk, fruit and vegetables and the quiet life and a lack of intense urban development. If one begins to get involved in trying to upgrade to the degree that we are talking about here, certain rural areas, aren't we kind of going contrary to the life style of those who moved into the area or inhabit the area looking for that serene life?

Dr. **Parker**. Many of the people who would like to have the amenities to be able to live in the rural environment and have those amenities economically, don't have that option and can't make that choice unless there is a way to earn a living there, and this does provide an opportunity to have jobs and economic growth that aren't necessarily as intensive as in urban areas.

I think, given the depression in the logging industry and all of the problems of the Oregon economy, because of the problems out of logging and timber, I think they are more open now to other avenues. Telecommunications is a very clean kind of development rather than the smokestack kinds of industrial development.

Mr. **Wise**. And in a rural area, only 1 hour's drive from here, we want you. Come to West Virginia.

Mr. **McCandless**. We have high sulfur coal.

Mr. **Wise**. And low.

Mr. **McCandless**. Thank you, Mr. Chairman.

Mr. **Wise**. Mr. English.

Mr. **English**. Thank you, Mr. Chairman.

Dr. Parker, some 50 years ago, we in the Congress and the U.S. Government adopted the policy of universal telephone service and the concept we would make this service available to virtually everyone in this country. The question I suppose that is occurring these days, though, is exactly what does that mean? Does that mean that virtually every community, every person, has access to the same level of service? Or are we going to see a gap? The gap has already started to develop, it is going to continue to grow, I am afraid, between the kinds of service that are available.

That kind of service has an impact not just on the person who lifts up the telephone to use it, but it also has an impact upon the educational opportunities for young people in those communities. We are finding more and more that we might need fiber optics with the two-way communications to be able to provide educational opportunities to young people. We are finding as far as small business and industries locating in rural communities, they need modern, up-to-date communications systems.

In looking at this question of providing universal service, in trying to deal with the problems of rural communications, should we be looking at this in total as a package type of deal rather than simply looking at trying to make certain, as Mr. McCandless was pointing out, that a person sitting out on the end of a line some place in a remote rural area is guaranteed the same type of service that someone has who is located downtown Manhattan, for instance?

Dr. **Parker**. There's certainly a demand for comparable service, and if we want to have jobs for people in rural areas, the businesses aren't going to locate in rural areas that don't have comparable service. Where there's any opportunity for economic development, I think we want to be able to help the telephone companies that need a little help in order to get that comparable service there.

I think we should have a national policy goal of what I call the universal information access as the updated version of universal telephone service. When all you could do on the telephone was talk on it, then whether it was rural or urban, that is all you needed. Now that all the urban phones are good for fax machines and data modems and a variety of other services, the rural areas that don't have those services are disadvantaged severely.

Mr. **English**. But we also, of course, are looking, during these difficult times of Gramm-Rudman and budget problems, at the ability to go out and to do this, to provide equal service to every person, or even every community in the United States. Fiber optics is an expensive proposition. There are economics that come into play with regard to not only the wisdom of moving in that direction but also it comes into play with the ability to do it.

Are we going to find ourselves in effect prioritizing where in rural America we are able to put the most modern, up-to-date communications systems, and should that be a part of the overall decisions as to a community that in fact is going to have a chance to grow in the future? Or do we put the system in and then simply hope that maybe something will happen and that community will grow?

I guess it is a chicken and egg type proposition. Have you any solution for us as to which direction we should go in?

Dr. **Parker**. I agree with you, it is probably too expensive to think of putting fiber everywhere at this time, and I think it is not our place to make the judgment is fiber more or less expensive than copper or microwave or radio. For a lot of the rural areas, I think the basic exchange radio telephone service, adding a radio telephone to the rural household, is the way to solve the problem, not fiber. I think those technology decisions may need to be made on a case-by-case and community-by-community basis.

And with respect to the Gramm-Rudman question, I really don't understand Gramm-Rudman scorekeeping, but I think——

Mr. **Wise**. Please don't feel bad, nobody else does either.

Dr. **Parker**. It seems to me asking for an additional $150 million in loan funds where the money will be repaid, it's sort of funny scorekeeping to count all of the loans and not credit against it the money when it is paid back. I think the actual cost to the taxpayer is really the interest rate subsidy, and if there is a differential of 1 percent between the borrowing rate and lending rate on $150 million, the taxpayer cost is $1.5 million, and when you are used to dealing in billions and more, $1.5 million is not a lot of money, which is why I said it was a modest proposal.

Mr. **English**. If I could, one final question with regard to that. The fact of the matter is we do have Gramm-Rudman, it is charged against us. it is something that we have to deal with and live with, and it does mean that there is likely not enough in the way of resources; $300 million is provided in the budget, $300 million is probably—well, $300 million is not going to be enough to provide seed money for a new program. We are going to have to take existing programs, and we have worked those, readdress them, and do that with regard to the REA funds that we have.

So the question becomes one of priorities. How do we establish those priorities? Which communities are, in effect, going to receive assistance, and which communities are not? Or at least which communities are going to receive them first if you would like? There are some communities, there is no question in my mind, that because of the type of leadership they have in those communities, the kind of people they have, they are very likely going to grow. There are other communities, quite frankly, that I have got my doubts about it, and I think we have all seen that.

I think it is probably up to the communities themselves as to which ones grow and which ones don't. Some communities don't want to grow, they want things just like they have been, like they were 10, 20, or 30 years ago, and that is fine if that is what they want.

But at some point, it seems to me, we have got to devise a system that assists those that in fact have that opportunity and use those very limited resources in that regard. You don't have any guidance for us as to how we should approach that, do you?

Dr. **Parker**. I agree completely with what you just said, I think that is the right approach.

With respect to overall budget issues, in the larger scheme of things, given that agricultural employment is only 9 percent of the jobs in rural areas, I don't think we can depend on agricultural policy to solve rural development policy, and you may want to have some reallocation and reprioritizing within agriculture budgets to support nonagriculture rural development programs.

With respect to—for that piece, however much or little, that is allocated to telecommunications infrastructure, I think you said, in other words, what I said earlier about thirsty horses, I think we have lots of thirsty horses, and they are the ones to be first in line for whatever REA funds are available.

Mr. **English**. Thank you, Mr. Chairman.

Mr. **Wise**. Thank you. Mr. Schiff.

Mr. **Schiff**. Thank you, Mr. Chairman. I have no questions.

Mr. **Wise**. I have one question I would like to ask, which is perhaps a big question. Since the subcommittee has jurisdiction, are there any policies of the FCC you think impede development in telecommunications for rural areas?

Dr. **Parker**. I think the FCC is to be commended for all of the consideration they have given to rural areas in crafting their policies very carefully. I think the comments I would make are to some extent fine tuning.

The major issue is to create incentives for the larger telephone companies to upgrade their rural areas and their trunk lines that connect the rural areas into the rest of the network, and it seems to me that some kind of regulatory tradeoff could be entered into. Some might call it a new social compact, others might more cynically call it a political deal, but it seems to me there are things that large telephone companies want from regulators in the way of deregulation, and there are things the regulators should want from the telephone companies in the way of upgrading service quality in rural areas. Maybe there is the makings for a deal there.

Mr. **Wise**. I thank you very much. Dr. Parker, I may submit additional questions to you in writing. If so, I would ask you to return them in writing, and we will make them part of the record.

Dr. **Parker**. I would be very pleased to do that.

Mr. **Wise**. I appreciate very much your coming here today.

Dr. **Parker**. My pleasure.

Mr. **Wise**. The next panel, we are privileged to have from two State public service commissions, we have the Honorable Marta Greytok, chairman of the Public Utility Commission of Texas representing the National Association of Regulatory Utility Commissioners; and the committee is also glad to see returning the Honorable Boyce Griffith, chairman of the Public Service Commission of West Virginia.

[Witnesses sworn.]

Mr. **Wise**. It is a pleasure to have you here. You both have a good deal of experience, particularly in the area of rural areas. So I would invite you to proceed in any way you want. Your written statements will be made a part of the record.

Ms. Greytok, why don't we start with you.

STATEMENT OF MARTA GREYTOK, CHAIRMAN, PUBLIC UTILITY COMMISSION OF TEXAS, REPRESENTING THE NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Ms. **Greytok**. Mr. Chairman, I would like to read a portion of my remarks into the record and then ask that the entire text be entered into the record at the conclusion, and then I will stand ready for questions.

Mr. **Wise**. Certainly.

Ms. **Greytok**. Good afternoon. I wish to thank you for allowing me this opportunity to discuss telecommunications issues facing rural America.

As chairman of the Public Utility Commission of Texas and as a member of the committee on communications of the National Association of Regulatory Utility Commissioners, I am vitally concerned about the balance of interests at stake in bringing the information age to all residents of our Nation.

My testimony today will focus on three issues: The introduction of limited competition in telecommunications services, the importance of maintaining local exchange franchise boundaries, with particular regard to the Texas ARCO case; and the public policy challenges of bringing the information age to all citizens.

Let me begin with a brief discussion of our regulation of the local exchange franchise. With very few exceptions, our 66 local exchange telephone utilities in Texas operate in a "singly-certified" service territory. That is, our commission has granted authorization to the telephone company to provide service within the specific geographic area and has guaranteed that no other business or utility is allowed to provide local exchange service in that same area.

The regulated public utility exchange franchise arrangement has served the public well for over 100 years. Since the late 1960's, however, the public telephone utilities have encountered a changing environment that has brought new competitive challenges to the previously secure monopoly market.

Perhaps the clearest example of a now competitive service market in the local exchange industry is the manufacture and sale of customer premises equipment.

The transition of any service from a regulated monopoly environment to an unregulated free market has been, and must continue to be, a cautious and well studied change. We, as policymakers, must ensure that partial deregulation of telecommunications does not endanger the availability of that service to our consumers, or threaten to destabilize a fledgling competitive industry.

Earlier this year, our commission issued a report to the 71st Texas Legislature that evaluated the extent of competition in local exchange and interexchange service markets throughout our State. In that study we find that very little competition currently exists for basic local exchange service in Texas.

Because, in my opinion, the provision of basic local exchange telephone service remains a monopoly, we must preserve not only the regulation of local service, but also the integrity of local exchange franchise boundaries. There is currently a Texas case on appeal in the Federal court which, I believe, threatens to disrupt the balance between the regulated monopoly and its protected serving area.

Allow me to provide you with a brief history of that case. In 1983, the Atlantic Richfield Co., or ARCO, expanded its research facilities in Plano, TX, outside of Dallas/Fort Worth. Plano is in GTE's service territory. ARCO used its own microwave link to connect the Plano complex to additional Southwestern Bell circuits in Dallas—effectively providing Bell dial tone to its Plano offices. In doing so, ARCO claimed it needed ready and accessible access to high quality telecommunications facilities that would link the Plano complex with ARCO's other operations around the world. GTE objected, of course, because that rerouting represented not only a great loss of local, private line, and toll revenue to the company, but an infringement on its service territory as well.

In 1985, the Texas commission ordered Southwestern Bell to cease providing the additional circuits through which ARCO was routing the service. ARCO petitioned the FCC for relief. The FCC preempted the PUC order, stating that the order violated a ratepayer's Federal right to interconnect with the public switched network in ways that are "privately beneficial without being publicly detrimental." We are now all anxiously awaiting the decision of the Federal appeals court, and I understand that in May the hearing was held on that.

I believe that by allowing a large customer to receive local service from a different exchange than that in which the customer was located, the FCC has created the opportunity for telephone companies to "poach" large customers from one local exchange to another. Such a policy, if upheld, will surely undermine the fundamental principles by which local exchange services are regulated, and may have a particularly great impact on rural local exchange customers. Without the assurance that every local exchange carrier will have the right to serve those customers, large or small, who locate in their service territories, what incentive will the carriers have to try to attract those companies to their communities? In many rural areas, the local phone company is the single largest economic presence and a community leader in the promotion of economic development.

Moreover, business customers in rural areas serve a particularly critical role in helping bring to those areas the latest technological advantages in telecommunications, many of which their urban neighbors may have already come to expect. If the local exchange carrier loses those firms or fails to continue to attract those businesses, it may further postpone the availability of information age technology to all residents in our country.

This brings me to the final issue I will discuss today, and that is the challenge we face in bringing the benefits of the "information age" to all local telephone users. Aside from my formal remarks, I would like to say I grew up in south Texas near the Rio Grande Valley, and in that area, even today, the black rotary dial telephone is pretty "high tech." I think it is important to note that some of the questions that were asked earlier are ones that I can definitely relate to, and I hope that we will have an opportunity to discuss those.

The cost of bringing new technology to the network is an issue greatly magnified for our rural telephone subscribers. These subscribers are doubly disadvantaged, in that rural networks generally serve a fewer number of customers over which to distribute the costs of the network upgrades; and furthermore the cost of installing those upgrades may be higher due to the large distances the network covers. We have a local telephone company in Texas, for example, for which the nontraffic-sensitive cost of simply maintaining its network, absent any upgrades, exceeds $2,000 per subscriber per year—over 10 times the national average.

Clearly, this phone company would be unable to recover those costs through local rates alone. And the additional cost of updating the system to compare with that of the company's urban counterparts would simply be prohibitive.

For those reasons, the Federal high-cost assistance program administered through the National Exchange Carrier Association, and the reduced rate loans offered by the REA are critical to the well-being of Texas rural phone companies. The high cost assistance program directly defrays the cost of maintaining the networks that keep our farmers, ranchers, and other far flung citizens within the reach of our telephones. And the REA loans help ensure that rural phone companies can afford to undertake the expensive construction and maintenance programs that keep those networks working. Programs such as these must be maintained if we are committed to ensuring that our rural subscribers do not become technologically second class citizens.

I see the trends, clearly at the Federal level, toward shifting a greater and greater proportion of telephone service costs to the local subscriber. The FCC's subscriber line charge has now increased every residential user's phone bill by $42 every year. Texas lawmakers and policymakers alike are committed to promoting universal service in our State, and I believe that a steadily rising burden for local subscribers is counterproductive to that purpose. Moreover, I would like to promote universal service of a sort that does not discriminate between rural and urban subscribers but makes technology and economic benefits available to all our residents.

In closing, then, I would simply encourage our Federal policymakers to keep in mind the ongoing struggle of our rural neighbors to keep pace with the rapidly changing world of telecommunications technology. I would urge them to preserve the integrity of the local exchange franchise, because that is the cornerstone of our regulatory framework and a critical element in our careful balance of regulatory policy.

And, finally, I would ask them to take every measure to ensure that telecommunications technology is available not only to the privileged urbanites, but to rural communities as well who are equally concerned with preserving their own economic vitality.

Than you.

Mr. WISE. Thank you.

[The prepared statement of Ms. Greytok follows:]

TESTIMONY OF MARTA GREYTOK, CHAIRMAN

PUBLIC UTILITY COMMISSION OF TEXAS

ON

TELECOMMUNICATIONS ISSUES AFFECTING RURAL AMERICA

BEFORE THE HOUSE GOVERNMENT INFORMATION, JUSTICE,

AND AGRICULTURE SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS

JUNE 14, 1989

Bringing the Information Age to Rural America: A Regulator's Perspective on the Local Exchange Franchise

27

I appreciate having the opportunity to present a state regulator's perspective on this important issue in telecommunications. As Chairman of the Public Utility Commission of Texas and as a member of the Committee on Communications of the National Association of Regulatory Utility Commissioners, I am vitally concerned about the balance of interests at stake in bringing the Information Age to all residents of our nation.

My testimony today will focus on three issues: the role of the local exchange franchise as a provider of regulated monopoly services; the introduction of limited competition in telecommunications services; and the public policy challenges of bringing the information age to all citizens.

Let me begin with a brief discussion of the most basic principle that guides us: regulation of the local exchange franchise. The concept of local exchange carrier regulation is, of course, founded upon the theory of the natural monopoly. Through regulation, we protect consumers of the monopoly services from unfair pricing or business practices that might otherwise occur in a monopoly environment. Moreover, we impose an obligation on the monopolist to serve all of the consumers within its service territory in accordance with our specifications. In Texas, for example, we require each local exchange carrier to provide service to ninety-five percent of its applicants within five days of the request, and to repair ninety percent of its out-of-service lines within one day. In return for these regulatory conditions, we offer the monopolist a protected service area in which to operate.

And how do we identify a monopolistic market? Through a number of economic measures, such as the existence of natural barriers that would prevent other firms from entering the market--for example, the economies of scale and the prerequisite capital investment--and the extent to which the service may be substituted with other types of services. Clearly, basic local telephone service qualifies as a natural monopoly. There are few substitutes for a telephone, and the cost of two or more companies building side-by-side local networks would be prohibitive and wasteful.

With very few exceptions, local exchange telephone utilities in Texas operate in a "singly-certified" service territory. That is, our Commission has granted authorization to the telephone company to provide service within the specific geographic area, and has guaranteed that no other business or utility is allowed to provide local exchange service in that same area.

The regulated public utility exchange franchise arrangement has served the public well for over one hundred years. Currently, over ninety-three percent of American households have basic telephone service. The quality of service generally remains high throughout the country.

Since the late 1960's, however, the public telephone utilities have encountered a changing environment that has brought new competitive challenges to the previously secure monopoly market. Recognizing that potential competitors could bring new vitality to the telecommunications industry, public policymakers have re-defined certain aspects of the regulated monopoly framework to allow those competitors to enter certain portions of the utilities' business territories.

Perhaps the clearest example of a now-competitive service market in the local exchange industry is the manufacture and sale of customer premises equipment, or CPE. CPE, to the residential consumer, is simply the telephone itself; to the business consumer, however, it may represent equipment as complex as a PBX or in-house switching mechanism. In a series of major public policy decisions, the Federal Communications Commission determined that the provision of telephone sets and other premises equipment should no longer be treated as regulated monopoly service. As a result, competitors are now allowed to provide telephones and other business communications systems in the telephone utilities' territory. In return, regulation over the telephone company's provision of those services has been lifted.

The transition of any service from a regulated monopoly environment to an unregulated free market has been, and must continue to be, a cautious and well-studied change. We, as policymakers, must ensure that partial deregulation of telecommunications does not endanger the availability of that service to our consumers, or threaten to destabilize a fledgling competitive industry.

State utility regulators are faced with a growing number of service markets that are encountering competitive challenges; today, however, our Commission believes that the level of competition in those markets has not yet matured to a degree that would warrant deregulation. Rather, in those markets our Commission exercises its statutory authority to approve competitive pricing plans and detariff services. Such flexible regulatory treatment allows the utility to compete more effectively in the designated markets. As always, our Commission continues to protect customers in those non-competitive service or geographic markets through the traditional application of Commission-approved, tariffed rates.

Earlier this year, our Commission issued a report to the Seventy-First Texas Legislature that evaluated the extent of competition in local exchange and interexchange service markets throughout our state. We make one observation in that study which, I believe, is particularly relevant to my testimony today. That is, very little competition currently exists for basic local exchange service in Texas. True, some services are currently available that enhance customer access to the local exchange, such as cellular and rural radio-telephone systems. Those services, however, are not so widely used nor universally applicable to pose a significant challenge to the provision of local exchange service at this time. We recognize that other systems, such as satellite or two-way interactive cable television, might offer substantial competition in the future, but that day has not yet arrived.

Because, in my opinion, the provision of basic local exchange telephone service remains a monopoly, we must preserve not only the regulation of local service, but also the integrity of local exchange franchise boundaries. There is currently a Texas case on appeal in the Federal Court which, I believe, threatens to disrupt the balance between the regulated monopoly and its protected serving area.

Allow me to provide you with a brief history of that case. In 1983, the Atlantic Richfield Company, or ARCO, expanded its research facilities in Plano, Texas. Plano is in GTE's service territory. ARCO used its own microwave link to connect the Plano complex to additional Southwestern Bell circuits in Dallas--effectively providing Bell dial tone to its Plano offices. In doing so, ARCO claimed it needed ready and accessible access to high-quality telecommunications facilities that would link the Plano complex with ARCO's other operations around the world. GTE objected, of course, because that rerouting represented not only a great loss of local, private line, and toll revenue to the company, but an infringement on its service territory as well.

In 1985 the Texas Commission ordered Southwestern Bell to cease providing the additional circuits through which ARCO was routing the service. ARCO petitioned the FCC for relief. The FCC pre-empted the PUC order, stating that the order violated a ratepayer's federal right to interconnect with the public switched network in ways that are "privately beneficial without being publicly detrimental." We are now all anxiously awaiting the decision of the Federal Appeals Court.

I believe that by allowing a large customer to receive local service from a different exchange than that in which the customer was located, the FCC has created the opportunity for telephone companies to "poach" large customers from one local exchange to another. Such a policy, if upheld, will surely undermine the fundamental principles by which local exchange services are regulated, and may have a particularly great impact on rural local exchange customers. Without the assurance that every local exchange carrier will have the right to serve those customers--large or small--who locate in their service territories, what incentive will the carriers have to try to attract those companies to their communities? In many rural areas, the local phone company is the single largest economic presence and a community leader in the promotion of economic development.

Moreover, business customers in rural areas serve a particularly critical role in helping bring to those areas the latest technological advantages in telecommunications, many of which their urban neighbors may have already come to expect. If the local exchange carrier loses those firms, or fails to continue to attract those businesses, it may further postpone the availability of Information Age-technology to all residents in our country.

This brings me to the final issue I will discuss today, and that is the challenge we face in bringing the benefits of the "Information Age" to all local telephone users. It's my experience that we all tend to play pretty fast and loose with that term. I believe "Information Age" technology may have a different meaning to every user, and that term is certainly a moving target over time.

I grew up in the Texas Rio Grande Valley, and in those days having any kind of telephone at all was pretty high-tech. A black, rotary-dial phone on an eight-party line was the best we could hope for. In fact, that phone is still in my home today. And while the Rio Grande Valley is making slow but steady progress in telecommunications, and eight-party lines are few, still, the black rotary telephone and the absence of direct-dial long distance are the facts of life in that area.

Today, however, most people expect to be provided with a touch-tone telephone on a single-party line that's quiet enough to handle computer modem transmissions and capable of directly dialing worldwide without operator assistance. The challenge, then, is in predicting with accuracy the services that consumers will expect as part of their basic local service ten, twenty, or thirty years from now. It's important that we correctly anticipate those consumer demands in the regulated provision of basic local service. Those demands will determine the extent to which we promote the development of enhancements to the local network; and incorrect predictions could lead to costly errors for our utilities and our consumers.

The cost of bringing new technology to the network is an issue greatly magnified for our rural telephone subscribers. These subscribers are doubly disadvantaged, in that rural networks generally serve a fewer number of customers over which to distribute the costs of the network upgrades; and furthermore, the cost of installing those upgrades may be higher due to the large distances the network covers. We have a local telephone company in Texas, for example, for which the non-traffic-sensitive cost of simply maintaining its network, absent any upgrades, exceeds $2,000 per subscriber per year--over ten times the national average.

Clearly, this phone company would be unable to recover those costs through local rates alone. And the additional cost of updating the system to compare with that of the company's urban counterparts would simply be prohibitive.

For these reasons, the federal high-cost assistance program administered through the National Exchange Carrier Association, and the reduced-rate loans offered by the REA, are critical to the well-being of Texas rural phone companies. The high-cost assistance program directly defrays the cost of maintaining the networks that keep our farmers, ranchers, and other far-flung citizens within the reach of our telephones. And the REA loans help ensure that rural phone companies can afford to undertake the expensive construction and maintenance programs that keep those networks working.

Similarly, the Texas toll pooling system serves an important role in helping all local subscribers in our state share in the cost of promoting universal service to our rural neighbors. Our toll pool redistributes the revenues that local companies collect on intraLATA toll calls through a formula based partly upon each carrier's cost of providing service.

Our current cost allocation methods are also important in helping all of our state's telephone subscribers enjoy the benefits of modern technology. These cost allocations allow local carriers to recover some of the cost of network upgrades through access charges to long-distance carriers. All these cost and revenue-sharing programs are simply the lifeblood of many of our small rural carriers, and must be maintained if we are committed to ensuring that our rural subscribers do not become technologically second-class citizens.

I see the trends, certainly at the federal level, toward shifting a greater and greater proportion of telephone service costs to the local subscriber. The FCC's subscriber line charge has now increased every residential user's phone bill by $42 dollars every year. Our Commission has made every effort at the state level to see that our share of the network's cost is not similarly redistributed. Texas lawmakers and policymakers alike are committed to promoting universal service in our state, and I believe that a steadily rising burden for local subscribers is counterproductive to that purpose. Moreover, I would like to promote universal service of a sort that does not discriminate between rural and urban subscribers. I would like to see a universal service that makes technology equally available to all our residents, so that they may enjoy the economic benefits that such technology may offer.

In closing, then, I would simply encourage our federal policymakers to keep in mind the ongoing struggle of our rural neighbors to keep pace with the rapidly changing world of telecommunications technology. I would urge them to preserve the integrity of the local exchange franchise, because that is the cornerstone of our regulatory framework and a critical element in our careful balance of regulatory policy. And finally, I would ask them to take every measure to ensure that telecommunications technology is available not only to the privileged urbanites, but to rural communities as well who are equally concerned with preserving their own economic vitality. Thank you.

Mr. **Wise**. Our next witness will be the Honorable Boyce Griffith. I would like to make a personal observation. Boyce, I have had the privilege of living outside the town of Glendenning, which is a rural area much like what you come from, where you drive 5 miles out of Clendenin, turn left, go 2 miles on the hard road, go half a mile until you cross the creek, and when you pass through the creek and you can't go any further, that is our house. And the telecommunications or the telephone system there has always been a long-distance call from Clendenin to Charleston.

You became chairman 6 months ago, and when I went home 2 weeks ago and picked up the phone to call Charleston and dialed "1", they said I no longer had to do that any more. I want to thank you for bringing modern telephone service to another rural area in West Virginia. You are a heck of a chairman.

With that introduction——

Mr. **Griffith**. Thank you, Mr. Chairman.

I didn't realize I had done that.

Mr. **Wise**. There are a few things people have thanked me for, too. You ought to take some credit for some of the things you may not have done.

STATEMENT OF BOYCE GRIFFITH, CHAIRMAN, PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

Mr. **Griffith**. Mr. Chairman and members of the subcommittee, I am Boyce Griffith, chairman of the West Virginia Public Service Commission. I appreciate this opportunity to testify on behalf of the State of West Virginia.

West Virginia is primarily a rural State of mountainous terrain with many small communities and cities, the largest having less than 100,000 inhabitants. The total population of the State is less than 2 million. Manufacturing and mining are the dominant industries. However, tourism and service industries have the highest growth rate. Of particular interest in West Virginia is the growth of telecommunications—linked businesses made possible by our up-to-date telecommunications network.

The information age has brought jobs to West Virginia. The information age provides employment opportunities for rural Americans in the service sector. Technology does not recognize geographic boundaries. This enables telecommunications intense industries to locate in rural areas and easily serve both rural and urban customers.

West Virginia is served by 10 local exchange carriers totaling approximately 800,000 access lines, over 600,000 of which are residential. The Chesapeake & Potomac Telephone Co. of West Virginia (C&P) serves 85 percent of the access lines with the rest served by GTE South, Contel, Alltel, two cooperatives and several other small telephone companies. Interexchange carriers include AT&T, MCI, U.S. Sprint and several resellers and alternate operator service companies. The public service commission allows intralata toll competition within the State's two primary latas and market area. Cellular operations presently serve the Ohio and Kanawha River Valleys and several more will go into operation in the near future.

By the end of 1989, C&P will have one party service to all customers with equal access capability to 80 percent of their market. By the end of 1991, 76 percent of the central offices will be digital—the highest penetration in the Bell Atlantic region. Interoffice fiber optic is in place for the largest population areas and is being deployed at a rapid rate throughout the State. Next year custom local area switching service [class], made possible by the latest signaling system, will be available in a large part of C&P's service area.

These developments have enabled C&P Telephone to place operator service centers in Fairmont and Parkersburg, WV which provide operator services not only to West Virginians but to their customers in other C&P areas as well. A directory assistance center to serve the Washington, DC area is to open in Beckley in the near future. C&P has also located two collection centers in West Virginia to perform services for out-of-State areas. Bell Atlantic operates a large multistate telephone directory distribution center from West Virginia's eastern panhandle.

In 1987, AT&T opened a credit management center and a business collection center in Charleston, one of three such centers in the Nation. The centers have been expanded three times and now 500 West Virginians do AT&T collection for one-third of our country. Chilton Research also located an office in Charleston to conduct telephone surveys on customer satisfaction for the seven State Bell Atlantic territory.

West Virginia University was the first location in our region to have a full, working integrated services digital network [ISDN] application.

One of four AT&T satellite communications centers which transmits and receives voice communications for the main long distance company with international service from Europe, Africa, and a major part of South America is located in Preston County at Etam, WV. This information age service requires unique terrain found only in remote rural areas.

Aside from a technologically advanced telecommunications system, other considerations which attract telecommunications/dependent-type service to rural areas, such as West Virginia, include a readily available work force, often not found in major metropolitan areas, low crime, a generally lower cost of living compared to urban areas, and the availability of affordable lease space.

Potential information type activities in a rural State could include electronic banking, catalog sales and services, computerized warehousing, airline/hotel reservation systems, credit card operations, telemarketing, and remote 800 answering services.

The telecommunications infrastructure of a State is as important to its economic development as is its highways, waterways and railways. The importance of a state-of-the-art communications system can hardly be overstated in the upcoming information age. To States such as West Virginia with terrain barriers limiting road and rail construction, telecommunications is by far the most efficient link to provide connection to the rest of the Nation and to the world for that matter. Fax machines, video-audio teleconferencing, voice messaging and retrieval, packet switching, intelligent network, satellite communications, and host of enhanced services and features yet unheard of opens up rural areas for economic development as never before and effectively ends geographic isolation.

One thing to guard against is toll rate deaveraging. Deaveraging would put rural areas at a big disadvantage in that high density areas would enjoy lower rates than less dense rural areas, making them less attractive locations for information and other type industries.

In conclusion, I believe it is imperative for rural States to be positioning themselves to participate in the information age by limiting, to the degree practicable, roadblocks which may inhibit the development of an efficient, modern, communications network while maintaining universal service through reasonable, affordable rates.

[The prepared statement of Mr. Griffith follows:]

STATEMENT OF BOYCE GRIFFITH, CHAIRMAN
PUBLIC SERVICE COMMISSION OF WEST VIRGINIA

RE: RURAL AMERICA AND THE INFORMATION AGE

BEFORE THE
GOVERNMENT INFORMATION, JUSTICE and
AGRICULTURE SUBCOMMITTEE
OF THE
COMMITTEE ON GOVERNMENT OPERATIONS
UNITED STATES HOUSE OF REPRESENTATIVES

June 14, 1989

Mr. Chairman and Members of the Subcommittee, I am Boyce Griffith, Chairman of the West Virginia Public Service Commission. I appreciate this opportunity to testify on behalf of the State of West Virginia.

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One thing to guard against, in my opinion, is toll rate deaveraging. Deaveraging would put rural areas at a big disadvantage in that high density areas would enjoy lower rates than less dense rural areas making them less attractive locations for information and other type industries.

In conclusion, I believe it is imperative for rural states to be positioning themselves to participate in the information age by limiting, to the degree practible, roadblocks which may inhibit the development of an efficient, modern, communications network while maintaining universal service through reasonable, affordable rates.

Mr. Wise. I want to thank both of the witnesses very much.

Let me start, Mr. Griffith, with you.

In your last couple of paragraphs, you mentioned your concern about deaveraging.

To what extent is that under your control as a State public service commissioner and to what extent, if any, does the FCC have a role in that?

Mr. Griffith. I think probably both of the FCC and our commission would influence that. Hopefully, that will never occur from the FCC jurisdictional standpoint. If you did, it will have a devastating effect on the rural area customer.

Mr. Wise. Ms. Greytok, do you have a response?

Ms. Greytok. I would concur with the chairman.

Mr. Wise. Let's suppose that a telephone company under your jurisdiction upgrades the telephone exchange to provide modern digital service before the older analog switch has been fully depreciated.

The question is who pays for the undepreciated cost for taking the switch out of service at that point?

Mr. Griffith. In West Virginia, the customer pays it. We amortize it over a period of 10 years.

Ms. Greytok. In Texas that is taken into consideration in the rate case. If it is something the company proves as essential to their service and beneficial to the ratepayer, then the ratepayer pays for it. If it is not proved up, the portion that isn't proved is taken out of the rates.

Mr. Griffith. Mr. Wise, I might also indicate that is not an automatic thing. In West Virginia, every new improvement a telephone company or carrier makes has to be certificated by us in advance.

In other words, it is not automatic that they can upgrade a system and let somebody pick up the cost. We determine that in advance by a certification procedure before the commissioner.

Therefore, we maintain some control over it.

Mr. Wise. Do you feel that for rural areas your depreciation and cost recovery policies encourage companies to upgrade facilities?

Ms. Greytok. I think companies have been in Texas, Mr. Chairman, comfortable with the fact that they have received even handed treatment in the rate cases regarding their upgrades.

Mr. Wise. Ms. Greytok, I was struck reading about the ARCO case. Now, Plano—is it Plano?

Ms. Greytok. Yes, sir.

Mr. Wise. That is not exactly a rural area?

Ms. Greytok. No, sir. It is more urban. I think it is important to note in Texas you actually only have 2 of our 66 telephone companies that are servicing large numbers of urbanites.

The rest of them have largely rural customers. What we are concerned about here is not the legalistic points, but the greater policy issues.

Mr. Wise. The implications for that are great for rural America?

Ms. Greytok. Yes. And the implications of breaching franchise boundaries are of great concern to our commission.

Mr. Wise. That seems to me to be directly a result of the FCC's decision. Is that a safe statement?

Ms. Greytok. Yes, sir.

Mr. WISE. In West Virginia can we have a similar situation, Mr. Griffith?

Mr. GRIFFITH. We did have. In fact, in 1969, it was not in the communications industry. It was in the natural gas industry.

As you well know, there were many glass factories in the Clarksburg area served by the Consolidated Gas Co. then, and the local operating company was Hope Natural Gas Co.

There was a developer of natural gas that moved in and drilled seven wells on the perimeter of Clarksburg. It moved in and took all the business away from the glass makers because they could sell the gas at a much cheaper rate.

As a result of that, Hope lost a substantial part of its industrial business. The West Virginia Public Service Commission, in effect, enjoined that because this company was not a utility at all. It just moved in and raided the industrial customers.

This is very similar to the case in Texas. The certificated area for that gas company was violated by that company.

It is not a regulated industry at all in that respect. As a result, all the other customers of the Hope system had to go in and pick up all the costs to roll into that Hope Gas Co., which increased the rates of the domestic customers and the commercial customers, at the same time decreasing them for the ones not regulated.

Mr. WISE. Do you see a similar situation arising in the telecommunications field affecting rural areas?

Mr. GRIFFITH. I can conceive of it happening. That may be one of the areas that this modern technology brings. I don't know.

Mr. WISE. Let me ask both of you the same question I asked the previous witness, which is are there specific FCC policies in place now that you feel impede development of modern telecommunications for rural areas?

I suspect, Ms. Greytok, you would point to the FCC involvement in the ARCO case. I wondered if there is anything else?

Ms. GREYTOK. I think in that particular instance, what you are seeing is setting up a scenario whereby poaching could easily take place.

Obviously, that would lead to a situation where the large telephone companies could go out and encourage large companies, industrials, and so forth, to receive the benefits of their system because it had greater technological advances and lower rates and thereby strained a lot of your smaller telephone companies and their residential customers with literally no economic development and a situation where they were picking up the tab for all of it. I think that is where we are concerned.

We are concerned that they stay within their franchise boundaries in order not to allow this kind of cream skimming to occur.

Mr. WISE. In this case of cream skimming, GTE has financial resources beyond many small, rural telephone companies. Perhaps, GTE is going to survive.

I question what this would mean in, say, in an area of Texas or West Virginia, or any rural area where you didn't have a company the size of a GTE.

It seems to me you could about wipe that company out if you took that major, if you took a major company like ARCO out of the rate base; wouldn't you?

Ms. **Greytok**. I think so. If you look down to the Rio Grande Valley, where you are beginning to have a lot of maquiladoras and twin plants, and across the border where you are getting support systems for those plants, including the manufacturers of small parts that are shipped across the border and then assembled, those small companies will be realistic about technology. They need the kind of support we have described.

Also, they are going to be able to have that cream skimming or poaching occurring within their franchise boundaries. I think that is an important issue.

Mr. **Wise**. From your work with the National Association of Regulatory Utility Commissioners, are you seeing this practice occurring in other areas of the county? You have brought one lawsuit. It is working its way up through the Federal judicial system. I wonder if this is an increasing problem?

Ms. **Greytok**. From the short time I have been with telecommunications, Mr. Chairman, let me say this case seems to have acquired the most attention of any of the ones that have come along for quite some time, mainly because of the situation it would impose for, I think, case law for all of the States.

In our discussion at NARUC it has acquired sort of a preeminence all its own.

Mr. **Wise**. In terms of FCC policies, do you have any suggestions or any concerns as FCC policies have applied to the development of telecommunications in rural areas?

Mr. **Griffith**. None other than the decision they have made with alternate operator services. That, I think, sticks out in my mind as certainly the case that they have dealt with from Texas.

We deal in legal precedents in this country. Certainly if that case is sustained in the Federal courts and upholds the FCC, I think you can look for it.

Mr. **Wise**. I am not excited about the decision they made in AOS either. We might be revisiting that again shortly.

I appreciate your being here.

Mr. McCandless has questions.

Mr. **McCandless**. Thank you.

I have a couple.

Mr. Griffith, in your testimony you talked about certain levels of service and the goals that have been set at some point or at least an objective has been accomplished to provide this level of service.

Was that as a result of your State public utilities commission saying to certain telephone companies serving certain areas that you have a time line on which to upgrade your area of jurisdiction since it is a public utility and since you have a franchises, we want you to be able to provide this service by a certain date?

Mr. **Griffith**. We normally have reporting periods by the utilities to the commissioner——

Mr. **McCandless**. Would you pull that microphone closer?

Mr. **Griffith**. We have reporting periods normally. Most of the time we don't even have to ask. They come to the report and they tell us about their progress in expanding and making top grade communications available to everybody.

As you may or may not know, we are a State that has many hills and a lot of valleys. It is very difficult and expensive to provide telephone services.

I think our telephone utilities have done a marvelous job in bringing a modern, updated telephone service practically to everybody in the State. I think it is the fact that we have had a good genuine, bona fide relationship between the utilities and the regulators that we have this.

So I think the answer to your question is, yes.

Mr. McCANDLESS. Ms. Greytok, I found your comment about the Rio Grande Valley very interesting. That part of Texas is very competitive with my part of the country as far as agricultural commodities are concerned.

You talked about the service there, and I am not sure at what level we currently have the service. The chairman talked about the chicken and egg theory.

The Rio Grande Valley has been developing over the last 5 years as a very important southwestern agricultural area bringing with it jobs, packing, shipping, and all of the various and sundry other service activities.

Has that then brought with it the necessary base upon which to improve the service or have you and Texas as a result of more demand, said to the providers in that area either provide a service to continue this growth or find a buyer?

Ms. GREYTOK. I don't think we have approached it quite in that manner. I do feel that in that part of the State they are beginning to upgrade, particularly in the area that you are speaking of, down in the Edinburg, Harlingen area and then over into Eagle Lake, and so on.

There are some upgrades, but there is room for more. I will say, having been in a field full of watermelons and wishing that I had a hard copy order instantly, you certainly cannot underestimate the value of, say, facsimile technology. If you have to wait until you get the order by some other method, the price may have fallen 2 cents or whatever. Although there may be a phone on a pole out in the watermelon field, there is not a facsimile machine attached.

It is something that you wish were available. It certainly is available probably for most of the produce sheds in the lower Rio Grande Valley and for the shippers.

But that technology is a recent thing. The telephone companies are, I think, moving as rapidly as possible to provide the service.

I think some of the smaller telephone companies, however, in our State have had needs that are a little bit beyond what they can handle. They would like to go ahead and put in place the technology that would then allow them to attract that same type of development.

As a comparison I remember when they built the freeway between Houston and Galveston. All of us wondered what in the world it was for.

It was massive sheets of concrete, and back then it was going nowhere as far as we could see. Today, it is so crowded, it is impossible to drive it. They have been upgrading it for as long as I can remember.

Back in my early days it looked like a useless expenditure. I also remember that and think about it in regard to telecommunications. Certainly we don't want a lot of useless telecommunications capability.

But in the areas that will provide for jobs and for economic development, I am extremely supportive of it because I can't help but feel that obviously the tax dollars are going to increase when the jobs increase and people are all working to their full effort.

Since they will be paying back the loans that were mentioned, I think, as was said by Dr. Parker, the cost to the taxpayers is the interest differential, and the interest probably will be more than offset by in the increase in jobs and opportunities for the constituency.

So I, while being a very strong conservative, also feel there is nothing more important than jobs and economic development to enhance our citizens' way of life and the quality of life. That is why I am testifying on behalf of that today.

Mr. **McCandless**. The other question I have deals with the upgrading and developing improvement of communications in growing areas.

An example, for purposes of our discussion, the Chileo Valley Telephone Co. used to be owned by a family. The elder used to do all the collecting of the pay phones himself and then go down to the bank at 3 o'clock after it closed and then put all the money out and count it.

A pretty basic type of accounting principle and operation. If there was any static on the line, we always said, well, the cows got too close to the barb wire fence. And she will move in a little while, and it will go away.

It went from that and then the California Telephone for awhile and then to GTE.

The resources to the two previous to GTE were not available to them to continue to keep up the technology and the growth of the area and it required capital outlay.

Isn't this kind of the ultimate for any growing area where you have a rural telephone company or a small company that maybe has a limited number of stockholders and do not have the resources? Isn't that the ultimate way you accomplish the upgrading, is to merge with a larger, more resource oriented people?

Ms. **Greytok**. Perhaps to some extent.

Mr. **Griffith**. I think that has already happened in West Virginia.

Mr. **McCandless**. That could be then more and more in the future as West Virginia and other rural areas develop that you would find your capital and find your improvements through mergers or buyouts or sales?

Mr. **Griffith**. Yes.

Of course, any time that larger companies do it, as long as you have REA money, you are able to keep the rates down. Certainly no investor such as C&P could borrow that type of debt capital at that rate.

Mr. **McCandless**. You brought up the point of REA money. Last year we talked about how do you establish the interest rate for telephone loans, and so on, and so forth, through the public funded corporation.

It seemed to me like there was available money that was not being utilized in both the REA and its equipment to rural telephone organizations, available capital without increasing the necessary availability of money; is that true, or am I incorrect?

Mr. **Griffith**. I don't think I know the answer to that.

Mr. **McCandless**. Ms. Greytok, do you?

Ms. **Greytok**. I do not know——

Mr. **Wise**. Mr. Schiff.

Mr. **Schiff**. I understand your description of telecommunications in what we are calling rural areas. I am not quite sure I understand, is there a specific request here for Federal dollars to do something?

Ms. **Greytok**. I think basically I am asking that you be sensitive to the needs of the three areas that I spoke to. One, the franchise boundaries and what happens with the types of cases that we have laid out.

Also the situation as regards to rural America and rural Texas specifically. And if that does come down to an enhancement of those funds, be sensitive to that and be aware they will be paid back.

I certainly do understand comments regarding the larger phone companies purchasing the other phone companies. We have a good situation in Texas regarding our rates.

So far we have managed to see the survival of the 66 phone companies in the State, the two very large ones and then all the smaller ones. I would not want to recommend that they give way to the two larger companies.

I would say that I don't think they are frivolous in their application for the loan funds. They do not want to go out and purchase more equipment or more updates than are necessary.

I do stay in close touch with the Texas Telephone Association. They are very prudent in the way they handle their business. We also have some of the types of arrangements like you just mentioned. Some of them are being purchased by yet another smaller phone company, not the two large ones. We are seeing some merging of those interests.

Mr. **Schiff**. Thank you.

I have just wanted to make sure I had that in my mind, the level of awareness we are being asked to take here.

Thank you very much, Mr. Chairman.

Mr. **Wise**. I like the way that you translate level of awareness into dollars.

I want to thank both of you very much.

Mr. **Wise**. Our third panel will be composed of four persons. Dwight Welch, general manager of the Hardy Telephone Co. That is Hardy County, WV, representing the National Telephone Cooperative Association.

A. Gray Collins, Jr., senior vice president, external affairs, Bell Atlantic, representing the U.S. Telephone Association.

Margaret Goatcher, president of the Cimarron Telephone Co. representing the Organization for the Protection and Advancement of Small Telephone Companies. And Curtis A. Sampson, president and chief executive officer, Communications Systems, Inc., representing the National Rural Telecom Association.

If the four of you would take your place at the table.

[Witnesses sworn.]

Mr. WISE. As with the other panels, your entire written statements will be made a part of the record. Please feel free to summarize.

Why don't we proceed in the order in which I named you.

If Dwight Welch would begin, it is always good to see you again. You are a frequent person before this committee and other committees.

You represent your particular interests and those of the National Telephone Cooperative Association very well as well as the fact that you are a high school classmate.

I think we ought to put all of that on the record.

STATEMENT OF DWIGHT WELCH, GENERAL MANAGER, HARDY TELEPHONE CO., REPRESENTING THE NATIONAL TELEPHONE COOPERATIVE ASSOCIATION

Mr. WELCH. Mr. Chairman, distinguished members of the committee, my name is Dwight Welch, and I am the manager of the Hardy Telephone Co., which serves approximately 1,800 customers in rural West Virginia.

In addition to Hardy, today I am also appearing on behalf of the National Telephone Cooperative Association which represents nearly 500 small telephone systems in 42 States. It is a pleasure meeting each of you and I appreciate the opportunity to appear before you.

The topic of my agenda today is rural telephony and the continuing need for the Rural Electrification Administration and the rural telephone bank telephone loan programs.

Through the REA and RTB telephone loan programs, we are able to spawn rural development while maintaining our commitment of making affordable telephone service universally available to our rural customers.

In seeking this objective, we at Hardy, and our fellow NTCA members, are helping ensure America's rural sector remains a viable force in improving the country's overall economic health and that rural Americans have the same access to jobs, education and services that are available to our Nation's urban population.

Through the use of advanced telecommunications, there is little our rural communities couldn't accomplish.

Modern telecommunications service is a vital part of rural America's infrastructure and the REA telephone loan program is the heart of rural telecommunications.

The existing REA and RTB lending programs are available to implement most of the changing needs of rural telephone companies and cooperatives. As loan programs which charge the borrower interest, they are relatively self sufficient.

Indeed, many in this room may be surprised to learn that in the history of these two programs never once have they experienced borrower default. So, at the moment funding is secondary to the far greater problem of the unenthusiastic management of these very programs that could easily be used to improve rural economies.

The REA and RTB telephone loan programs are stalwarts of rural development. But, the programs have certainly not run their course. A percentage of rural America remains unserved. And, existing service must be continually upgraded to meet the technology standards of today thus ensuring the future growth of our rural communities.

Hardy Telephone Co. would not be here today without this vital program. As of the late 1950's, there was no telephone service in the Lost River area.

The citizens had requested service from GTE which serviced neighboring communities but GTE felt that because the Lost River area was so sparsely populated and costly to serve that they couldn't economically justify it.

Thus, a group of citizens banded together from a telephone cooperative. The coop received an REA telephone loan and telephone service finally came to our community. REA has been playing an active and vital role for our cooperative ever since.

When I joined Hardy in 1982, the system was losing $160,000 a year and nearly unable to make its payroll. But, REA helped the system completely integrate digital switches by 1987, and in 1988 we installed a toll microwave radio system.

Our net worth is no longer negative and we are submitting an application for a new REA loan for outside plant and one more remote digital office. Also a portion of the funds will be used to tie fiber from the host switch to a remote.

Thus, you can understand the very real need that continues to exist for this important program. The fact that estimates indicate it will take nearly two decades before all rural areas are able to compete technologically with the urban areas only underscores this issue—Aspen Institute study.

Simply ensuring the existence and enhancement of the REA telephone loan program, however, will not guarantee borrower success and the commencement of rural development. Improving the lengthy loan application approval process is an equally important issue.

Finally, the last key that is necessary to unlock the REA telephone loan program is congressional assistance in addressing many of the restrictive REA program regulations that the agency has recently issued.

Mr. Chairman, I know you are already familiar with this issue, but I did want to let you know it is a major concern to us.

These regulations would have a broad negative impact on rural development if left unchanged. Many needy borrowers would be disqualified from the program due to low tier ratios and loan maturities could be sped up enough to actually increase subscriber telephone rates.

Members of the committee, in general so much is possible under the REA telephone loan program, yet as of late so little is being accomplished simply due to the uncooperative nature of the administration.

It is a problem that could easily be rectified through legislative language that could be incorporated in any one of the many agricultural oriented measures that are considered this year.

In closing, I would like to thank each of you once again and to remind you of the importance of maintaining our rural telecommunications network. Preserve it now and the entire country will prosper.

With your help the telecommunications industry in rural America can maintain the universal concept that industry and government have worked so hard to build and maintain through the years.

I ask for your continued support of the REA and RTB telephone loan programs on behalf of the rural telephone subscribers who are the direct recipients of the benefits these programs offer.

[The prepared statement of Mr. Welch follows:]

STATEMENT OF DWIGHT WELCH

MANAGER, HARDY TELEPHONE COMPANY

LOST RIVER, WEST VIRGINIA

ON BEHALF OF THE

NATIONAL TELEPHONE COOPERATIVE ASSOCIATION

BEFORE THE

HOUSE GOVERNMENT OPERATIONS COMMITTEE

SUBCOMMITTEE ON

GOVERNMENT INFORMATION, JUSTICE AND AGRICULTURE

June 14, 1989

Mr. Chairman, distinguished members of the Committee, my name is Dwight Welch and I am the Manager of the Hardy Telephone Company, a small cooperative in Lost River, West Virginia. In addition to Hardy, today, I am also representing the National Telephone Cooperative Association. It is a pleasure meeting each of you and I appreciate the opportunity to appear before you.

Briefly, NTCA is a national trade association representing nearly 500 small telephone systems serving rural consumers in 41 states. Hardy serves approximately 1,800 customers throughout the rural confines of Eastern West Virginia. Our subscriber density is only 2.3 per route mile of telephone cable which is extremely low when compared to the telephone industry as a whole which averages over 50 customers per mile. As a further point of reference, the Bell companies serve about 130 customers per mile. Thus, you can understand the need and continued importance of rural oriented systems such as Hardy.

The topic of my testimony this morning is the continued importance of the Rural Electrification Administration Telephone Loan Program, not only to NTCA members and their subscribers, but to all of rural America. This program is one of the country's first and finest examples of a successful rural development program. The central focus of all NTCA members and other small telcos must and will always be to utilize all available resources in making affordable telephone service universally available to our rural customers. And, the quality of such service must always equal that which is available to urban residents. In seeking this goal, our efforts can and will spark telecommunications related rural development which helps to ensure America's rural sector remains a viable force in improving the country's overall economic health and that rural Americans have the same access to jobs, education and health care that are available in our nation's urban communities.

Now, as each of us is aware, distance is perhaps the greatest obstacle associated with rural life. Fortunately, this obstacle can be overcome with ever increasing effectiveness, through the use of modern telecommunications facilities and services. Telecommunications can mitigate the so-called penalty of distance in such a way as to ensure rural areas are able to compete with urban areas in previously unimaginable ways. This is especially so during this "information age" that has been and will continue proliferating our society for decades.

Through advanced telecommunications, there would be little our rural communities couldn't accomplish.

Though we would expect money to play a central role in carrying out such lofty objectives, this is not the case in this situation. The existing REA Telephone and Rural Telephone Bank lending programs are available to implement most of these community services. As loan programs which charge borrowers interest, they are relatively self sufficient. Indeed, it might interest the people in this room to know that in the history of these two programs never once have they experienced a default by a borrower. This is terribly impressive! So, at the moment funding is secondary to the far greater problem of burdensome Administration proposals that in many ways are restricting our ability to move ahead with rural telecommunications development. Perhaps where this is more evident than anywhere else, is in regard to the REA Telephone Loan Programs.

Indeed, as I mentioned earlier, the REA Telephone Loan Program is one of the country's stalwarts of rural development. Today, rural America is 95 percent serviced with at least the most basic form of telephony. This would not have been possible without the REA program. But, the program has certainly not run its course. A percentage of rural America remains unserved. And, existing service must continually be upgraded to meet the technology standards of today thus ensuring the future growth of our rural communities.

Hardy Telephone Company would not be here today without this vital program. As of the late 1950's, there was no telephone service in the Lost River area. The citizens had requested service from GTE which provided telephone service for neighboring communities but GTE felt that because the Lost River area was so sparsely populated and costly to serve that they couldn't justify, from an economic point of view, providing initial telephone service to the region. A group of citizens then banded together and formed a telephone cooperative. The coop received an REA loan and telephone service finally came to our community. REA has been playing an active and vital role for our cooperative ever since. When I joined Hardy as the Manager in 1982, the telephone system was losing $160,000 a year and at the point of not making payroll payments. However, with the help of REA, Hardy went completely digital as of 1987 and in 1988 we installed a toll microwave radio system. Our net worth is no longer negative and we are submitting an application for a new REA loan for outside plant and one more remote digital office and we will be using these funds to tie our host and remote switches together with fiber optics cable, and to provide our most remote subscribers with basic radio service.

As you well know, recent Administrations have felt that the REA Telephone Loan program has outlived its usefulness and thus should be dismantled. In an effort to cement this concept into the minds of the American public as well as the Congress, those in charge of the program have simply chosen to under-utilize it. Clearly this was not the intent of the implementors of the REA program nor of scores of subsequent government leaders, such as yourselves on this committee, who have been extremely supportive of the REA and RTB Telephone Loan program.

It may come as a surprise to many that the REA Telephone Loan program does not exist simply to provide loans for telephone lines alone. Loans can include funds for developing or acquiring physical plant such as buildings, computers and other tools, vehicles and additional operating equipment. In addition, loans are not simply to fund projects in yet unserved areas. REA Telephone Loans are allowed and indeed encouraged for purposes of upgrading existing service areas. This would include replacing old cables with new fiber optic lines; installing advanced digital switches guaranteeing equal access, and should include cellular service encouraging general business competition. Seriously, upgrading is especially critical because estimates indicate that at the current rate of upgrading, it may be more than two decades before all rural areas are able to fully compete technologically with urban areas.

Simply ensuring the existence of the REA Telephone Loan program, however, will not guarantee borrower success. Improving the loan application and approval process is an equally important issue. Currently, due partially to foot dragging by the Administration as well as a complicated application process in general, it can often take several months to receive approval for an REA Telephone Loan application. Such timing constraints are devastating to rural telcos and their customers and could be used to completely circumvent serious, well intentioned and much needed rural development initiatives.

Another important issue adversely affecting the REA Telephone Loan program relates to recently issued program regulations that are extremely restrictive. Mr. Chairman, as you and your subcommittee know so well, the purpose of instructing the REA to codify existing procedures in the 1987 Reconciliation Act was to consolidate and clarify the policies and requirements of their loan procedures. Unfortunately however, REA took this opportunity to implement major policy changes, which if left unchanged, will likely lead to the demise of the REA Telephone Loan program. Specifically, the regulations impose an unreasonable TIER requirement of 125 percent climbing to 150 percent on all of a borrower's outstanding and proposed REA loans as a requirement to obtain an insured program loan; a reduction in the REA Telephone Loan repayment period and the elimination of authorized loan purposes which now allow approval of funds for physical plant, tools, equipment and vehicles. Federal legislation may be necessary to address these problem regulations.

In general, so much is possible under the REA Telephone Loan program, yet, of late so little is being accomplished simply due to the unwillingness of the Administration.

Mr. Chairman, members of the Committee, I can not stress the importance of the REA and RTB telephone loan programs enough. They lend themselves to rural development and guarantee the existence of the universal telecommunications network. Therefore, by strengthening them now the entire country will prosper. However, by ignoring them the resulting stagnated rural areas will ultimately drag down our urban centers as well. As you know, our federal government has focused on national rural policy since before the development of the Constitution. From the days of Thomas Jefferson, rural America's greatest advocate, through Franklin Roosevelt's New Deal reaffirming our commitment to rural America, and on up to the days of the current Presidential Administration, rural programs and the importance of our rural communities has not wavered far from most of our minds.

I am hopeful my thoughts as well as those of the other participants in these hearings will assist you in examining the current status and increasing need for modern telecommunications in our rural communities.

Thank you!

Mr. **Wise**. Thank you.

Next we will hear from A. Gray Collins, Jr., senior vice president of external affairs, with Bell Atlantic and representing the U.S. Telephone Association.

STATEMENT OF A. GRAY COLLINS, JR., SENIOR VICE PRESIDENT OF EXTERNAL AFFAIRS, BELL ATLANTIC, REPRESENTING THE U.S. TELEPHONE ASSOCIATION

Mr. **Collins**. Good afternoon. I am senior vice president for external affairs for Bell Atlantic. I am testifying on behalf of the U.S. Telephone Association, which has a membership of approximately 1,100 local exchange carriers. I want to thank you for allowing me to appear this afternoon and discuss this important concern to the telephone industry. That is, bringing the information age to rural America.

There is no question that the United States is moving rapidly into the information age. Experts predict that by the year 2000, two-thirds of the American work force will be employed in some form of information services. The problem facing rural America is an undeveloped telecommunications infrastructure, which is required for full participation in the information age. Many rural communities do not have essential private lines, touchtone phones or digital switching yet.

Therefore, the proper telecommunications infrastructure must be built which will link every home and business in the United States. Such an infrastructure, which should be universally available on a simple, dial-up basis to all Americans, remains vital to eliminating a society of information haves and those who are information have nots. An advanced telecommunications infrastructure is as important today to rural America's future as electricity, railway, and highway systems have been in the past.

My testimony this afternoon will focus on two important telephone industry matters affecting rural America. First, the importance of the telephone companies developing a telecommunications infrastructure and, second, the obstacles we face in developing such an infrastructure, if the infrastructure is to become reality in the United States.

The infrastructure must link every home and business in the United States and serve as America's super highway system in the information age. Such a network, one that can transmit combined audio and video data, and digital systems on which information services will be based, is the infrastructure foundation of our future.

In the rural areas, telephone companies are the only available entities who can deliver this to all of the public. Few others will seek to offer the service there. It is not economic for many of them to pursue these kinds of duplicate networks in rural areas.

Chairman Griffith explained how a modern telecommunications infrastructure can be important to a rural area. C&P of West Virginia has a high development of digital switches, a high capacity optical fiber circuit between the major cities and one of the highest digital trunking developments. Because we have that modern network in West Virginia, new services and businesses are developing in West Virginia.

As our society becomes more information oriented, communities that have full, modern telecommunications networks will be able to compete for businesses and jobs wherever they are.

Besides new business opportunities and new jobs, rural Americans will benefit in a number of other ways, such as education, medical, and entertainment services.

Mr. Chairman, Bell Atlantic has completed this study called "Delivering the Promise." It is a vision of the kinds of communications information services that will be available in tomorrow's world if we are allowed to develop those services. I would like to submit that for the record.

Mr. WISE. Without objection.

[The information follows:]

DELIVERING THE PROMISE:

A Vision of
Tomorrow's
Communications
Consumer

Bell Atlantic

INTRODUCTION

Americans, by nature, are futurists. We define ourselves not only in terms of what we are, but what we are becoming. Ours is a history of reaching milestones, and of constantly redefining ourselves in terms of our achievements. We see where we want to go, and we go there.

As colonists, we envisioned ourselves as a free and independent people. As pioneers, we saw ourselves taming a vast and fertile land that stretched across a continent. As immigrants, we saw that we could rise to success through hard work and the opportunities afforded by liberty. And as soldiers fighting for democracy, we perceived that we were bound for the center of the world's stage as the greatest global power.

Not coincidentally, we Americans have always set practical and technological goals for ourselves. Here, again, we have envisioned where we have wanted to be—and we have gotten there. From the industrial revolution to the transcontinental railroad; from the telephone to the television and from light bulb to computer; from automobile and airplane to moon-conquering spacecraft, our inventiveness has been entwined with our destiny.

Nor is it a coincidence that many of our achievements as a nation have been achievements for the individual: inventions that improve the average person's quality of life even as they revolutionize the way society moves, talks, or thinks.

Today the world's industrial nations are embarking upon the information age—the birth of which can be attributed in great part to the inventions, the economy, and the people of the United States. We at Bell Atlantic envision the U.S. as continuing its leadership role into this new age; and we believe most Americans share our vision.

Indeed, we believe that Americans are quite familiar already with the notion of an "information age": machines that respond to human voice commands; computer screens that can switch instantly among data, vivid graphics, and brilliant photographic images; automobiles and appliances equipped with small but powerful computer "brains"; and, of course, "video phones." In fact, a steady diet of "Star Trek" and other science fiction programs may have raised public expectations beyond what technology will ever be able to fulfill.

The American public is ready and waiting to enter the information age; but our telecommunications infrastructure—the public "highway system" of that age—is not yet ready to take us there.

Key elements in that "highway system" include powerful computer switches, complex software, and optical fiber cable. These elements combine to form what is known in telecommunications industry parlance as a **broadband** network—so named because of its ability to carry an extremely broad range of signals at once (e.g., telephone, TV, radio, etc.).

Like other local telephone companies, Bell Atlantic saw the promise of broadband many years ago and began converting its public network to handle the digital ("computer language") transmission for which broadband is designed. Today over a third of the company's lines and switches are digital. The company has taken further steps toward broadband by making improvements in network signaling that expand the efficiency and amount of control telephone customers can enjoy.

Arguably the most important component of broadband (the part that actually delivers telecommunications services to the public) is the **optical fiber: an ideal medium** for the transmission of telephone, TV, radio, computer, and other signals at tremendous speed and in vast quantity. Optical fiber has the capacity to raise residential communications services to a new threshold well beyond today's telephones, TVs, and other media.

Optical fiber is spreading through parts of the public telephone networks of the seven regional Bell telephone companies (the "Baby Bells"), as well as the networks of the long distance companies, the government, and many large private companies with advanced telecommunications needs. It is also spreading rapidly abroad. Japan, Germany, and France, among others, have launched aggressive drives to employ the new medium on a large scale. Optical fiber, many industrialized nations have recognized, represents a twofold opportunity: a way to better serve their citizens in the information age, and a foundation for strong international competitiveness in the years ahead.

The faster and more pervasively optical fiber spreads, the sooner broadband itself will follow—creating a market that will, in turn, spawn a new generation of communications products and services. We believe that when optical fiber reaches a sufficient number of American businesses and households, it will forge a "critical mass" that will portend the explosive entry by the American consumer into the information age.

But the current speed at which optical fiber is reaching the American consumer—i.e., the home—might best be described as "glacial." We believe this pace of construction is inconsistent with the needs of consumers and with America's need to compete in developing information age technologies.

To date, only a small and specialized group of communications consumers in the U.S. has direct access to optical fiber—and, thus, to broadband services. Communications technology has reached astounding new levels in the laboratory, in the large private corporation, and in the government project. But the full potential of computers, television, telephones, and other systems has yet to reach the average American.

The information age exists today for the elite; to deliver its promise to the public at large, we must foster—or unleash—efforts to create the necessary public infrastructure. We believe that the extension of broadband to the public at large is a goal in keeping with America's "futurist" heritage.

Today's telecommunications companies—notably the highly regulated Baby Bells—are best able to bring the necessary energy, experience, and drive to the cause of renewing America's critical telecommunications infrastructure. Given the freedom, we can and will deliver the promise of the information age to the American consumer.

To remain a world leader in telecommunications, and to strengthen America's ability to compete in information age trade, the U.S. must continue to upgrade its communications highways and universally available communications applications.

This requires that telecommunications companies such as Bell Atlantic be given the incentive to invest at higher levels, at a more rapid pace, and in applications that meet the real needs of consumers. Today that incentive is blocked by regulatory, legislative, and court-imposed restrictions: rate-of-return regulation and bans on entry into key lines of business (manufacturing, generation of information content, pursuit of interLATA business, and cable TV cross-ownership).

Rate-of-return regulation denies companies the incentive of higher profitability from their investments, thus stifling their drive to modernize. The line-of-business bans have the effect of inhibiting (or preventing entirely) the synergies among companion products and technologies that drive the development of each. We contend that there is, for example, a mutually supportive link between communications media and informational content. America's foreign competitors agree; and, being free of the aforementioned bans, enjoy the power to take appropriate action.

This fact emerges, for example, in a story published by *Media Business News* ("Japanese—A Yen For Production Companies," March 6, 1989), in which it reports offers by Sony Corp. and Matsushita Electronics to buy Coca-Cola subsidiary Columbia Pictures Entertainment Inc. "The speculation surrounding Columbia," the story states, "is but the latest manifestation of ongoing Japanese interest in the U.S. entertainment industry." The story quotes Neil Braun, senior vice president of corporate development and administration for Viacom International Inc., regarding the phenomenon.

> *Anybody who wants to buy a movie studio today is not doing it because he thinks the return on investment... is a good*

> *use of cash. It just isn't.... The reason they're doing it is because they see that owning libraries... is necessary to help them either drive a distribution business, like DBS (direct broadcast satellite) in Japan, or a technology like high definition television (HDTV).... It's exactly the same reason Sony bought CBS Records. They didn't buy it... because they thought they could make money per se in the record business. They did it because they felt they needed to own that library of music and talent in order to help drive compact disk and other technology... that they're... going to be a player in.*

The *Media Business News* article fits a pattern described by Dr. William H. Davidson of the University of Southern California in a paper entitled *Telecommunications Policy In Global Perspective* (October 14, 1987). He writes: "The telecommunications services industry is the focal point of an emerging set of global competitors and technologies. Japan in particular has targeted telecommunications services as a primary area of emphasis for investment and international market penetration.... A massive commitment of resources has accompanied this policy....

"Implementation of a universal modern network should be the primary goal of (U.S.) public telecommunications policy. Without radical change in current regulatory policies, a modern public network cannot appear (in the U.S.) in this century, if at all."

The current restrictions on the American local telephone industry—on rate of return, generation of information content, and the like—were imposed before the dawn of the information age, and before anyone thought that America's dominance in communications technology and trade might be challenged. The times have changed; the restrictions have not. We believe the consumer deserves better treatment than current restrictions allow.

In short, we believe that the public sector has a critical role to play at this juncture. There are numerous precedents for the government to act in support of building an industry or a public infrastructure: witness the 19th century land grants that stimulated the building of the transcontinental railroad, and the 20th century expenditures to build the interstate highway system. A more appropriate precedent, however, is the creation of the Bell telephone system through the government's granting of permission to AT&T to form a united public utility. Today, again, the telecommunications industry asks not for property or funding, but for permission: the freedom to operate at full strength within our post-divestiture environment—and to build the infrastructure that will meet the needs of today's and tomorrow's communications consumers.

The purpose of this study is to present a vision of what the widespread availability of broadband will mean to the American consumer. Our intent is not to dwell on the science, economics, or politics of broadband, but to focus on its uses. We have attempted to paint a picture of "everyday life" for tomorrow's consumers of communications services; we offer a view, subjective in tone but grounded in fact, of what the information age may "look like" to the average American.

Our method was to explore the kinds of services broadband is apt to make possible over the next 20 years, and then to imagine how these services might blend into the daily lives of hypothetical Americans of diverse interests, concerns, and backgrounds. We constructed these profiles mindful of the fact that 99 percent of Bell Atlantic's customers, numbering 11 million residential and small business customers, depend on us as their primary provider of telecommunications services.

The services we describe, not yet available (or affordable) to residential and small business customers, are based on technologies that exist today. In our vision, we show the rich potential we might realize from these technologies—if American industries can agree on setting key standards, and, most of all, if the telecommunications industry is freed to help make the vision a reality.

We assumed that all segments of American society and industry would be able to contribute, without prior restraints, to the realization of the vision. As such, our vision focuses on the technological, economic, and social forces (as opposed to legal or regulatory forces) that might influence the creation of a service.

We concluded that in the information age, many of the activities in the average consumer's daily life will revolve around some-

BEST COPY AVAILABLE

thing akin to today's TV screen. But this screen of the information age will differ radically from its ancestor. Far from being a one-way medium that spews out a constant series of pictures and sounds to a passive viewer, the information age screen will be a dynamic, interactive medium: a machine to which the consumer can "talk back," and far more.

The device to which we refer in the profiles simply as "the screen" will be a combination of many products and technologies: TV; radio; stereo; video recorder and player; audio tape recorder; computer; high-speed graphic printer; facsimile machine; and more. Today's technological developments point to the integration or compatibility of all of these devices.

We predict that the most singular element of this "TV-video-radio"-etc. machine, from the consumer's standpoint, will be the picture (i.e., the screen), with its manifold uses. (We recall the failed attempts by AT&T, about two decades ago, to offer "video phones" commercially; but today's broadband technology—and today's consumers—are far more sophisticated, pointing the way to a lower-cost video phone service that the public will be much more likely to accept.) We stress the significance of the machine's visual element because of the great influence of TV and other visual media on the public; that is not to say that the screen's audio and data-processing capabilities will play any less important a part in meeting the consumer's needs.

The integration of the many communications devices holds powerful implications in terms of consumer benefits. We envision a single device through which a consumer may watch television; view his cousin 1,000 miles away; conduct his office job on a telecommuting basis; engage in home banking and shopping; compose poetry; be advised instantly of who is calling him; receive messages wherever he goes; turn up the heat or turn off the stove from wherever he is. In short, we envision tomorrow's household or desktop screen as an electronic "butler" of inexhaustible capacity, capability, and patience.

The usefulness and appeal of the new services we envision will, we believe, stimulate widespread public demand and high levels of competition among equipment and service providers. These factors will combine to make this "butler" as widely affordable to consumers as its ancestor, the television, while possessing remarkable properties of personal service that were far beyond the capabilities of TV sets.

We stress the word personal. The information age screen will be extremely adaptable to the particular needs of consumers, in terms of the programming to which it will provide access, and in terms of the functions it will perform. It can render specialized services to the wage earner; the entrepreneur; the housewife; the invalid; the immigrant; the student; the elderly. Unlike the 1989 TV set, the screen of tomorrow will cater completely to the individual.

The same will be true, we believe, of the public broadband network itself. Such a network will provide excellent support to business, education, medicine, our legal and political systems, and other segments of society. In short, we believe that broadband has value that cuts across all social and economic boundaries; we believe it will be good for everyone.

In Appendix D we explore the conditions and approaches that may deliver our vision's promise to the consumer in the near future—and at affordable prices. Our main areas of discussion there concern new applications development; and economic incentives for all parties involved (including the consumer), as these matters affect the renewal of America's communications infrastructure. As we have noted here, we believe that the availability of technology, and of access to the public network, will be "givens" that pose no obstacle to America's entry into the information age.

THE PROFILES:

Introduction

On the following pages are profiles of nine Americans—all fictitious, but all, in our view, very plausible. All of these individuals belong to the middle-income bracket. All live and work in the mid-Atlantic region that is Bell Atlantic's principal operating territory. All are assumed to be reasonably "literate" about the consumer services available to them over the broadband network, though none are technically sophisticated in terms of knowing *how* these services work, and none care to be.

There, most similarities end among these nine individuals. They all come from different locales and different kinds of neighborhoods; they have divergent backgrounds and interests, and differing levels of education; they all derive their income in different ways; and they all have particular (often very personalized) ways of using the services available to them over the broadband network.

These nine hypothetical Americans do not by any means represent every economic, social, or cultural "type"; but they do offer the reader a *sampling* of the diverse kinds of needs and interests that the broadband network will be capable of serving.

The object of these profiles is *not* to portray unrealistic "consumers of the future" whose lives are dominated by telephone, television, and other communications services; the object, rather, is to show people going about their normal everyday lives, and to show how broadband-based services fit smoothly into their routines. We believe the broadband revolution will adapt to consumers—*not* the other way around.

The applications described here are, for the most part, merely different (and, we think, easier) ways to do things that people already do today. The profiled individuals use the various broadband applications not because they are new or "high-tech," but because they accomplish something that is valuable and basic to the way consumers live.

We believe the applications we describe could become available via broadband over the next 10 to 20 years. We do not attempt to mention *every* possible application; indeed, countless applications have yet to be imagined. Nor can we say precisely when a given service will become available: that depends not only on the speed with which the public gains access to broadband, but on the kinds of services for which consumers prove willing to pay.

Nonetheless, we believe we have chosen a representative sampling of broadband services for these profiles, which occur on various random dates between 1999 and 2009. We have so dated the profiles in order to convey the sense that there is no one set point in time at which all of the broadband services we describe will suddenly become available; these services will "phase in" as consumers demand them. A number of the profiles occur over a Friday-Saturday period in order to show how a consumer might use broadband services in shifting from weekday to weekend activities.

At the close of each profile is a key to the communications services noted therein. Phrases from the profile text are highlighted and accompanied by an explanation of what a given service is and does. This explanatory material may or may not be known by the person profiled. Each consumer's concern is with the usefulness of the communications application—not with how it works, nor whence it came.

Characters Profiled:

■ **HUGH**
Retired electrician
Baltimore, Maryland

■ **TOBY**
Truck driver
Wilmington, Delaware

■ **LENNY**
Restaurant manager
Washington, D.C.

■ **THEONA**
TV news copywriter
Arlington, Virginia

■ **JOYCE**
Homemaker
Trenton, New Jersey

■ **CHRISTOPHER**
Owner of landscaping company
Valley Forge, Pennsylvania

■ **SARAH**
Elderly homemaker
Wheeling, West Virginia

■ **FELIPE**
Teacher
Pittsburgh, Pennsylvania

■ **KAREN**
Farmer
Richmond, Virginia

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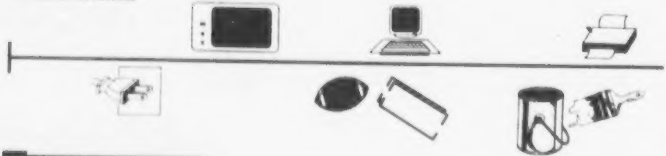
HUGH

Retired electrician

- Age: 67
- Widower since 1996
- Lives alone in his home in Baltimore, Maryland suburb
- Electrician, retired in 1995; income from modest savings, small company pension, Social Security benefits, and occasional part-time work



FRIDAY October 8 1999

He rises while it is still dark, and gets ready to take the dog for its morning walk. First he pauses at the TV-video unit, brings the screen brightly to life, and selects the utility channel.

> ***Guess I'd better do this now and get it over with. Those part-time jobs can disappear real fast.***

In moments the screen displays temporary and part-time jobs for electricians. There's a convention in town next Saturday and Sunday, and the set-up crew pay looks good. With a touch of the video screen, Hugh sends his application and receives notification that he may expect an answer before Monday night.

After breakfast, he decides to investigate what local football games are happening this weekend. Returning to the screen's utility channel, he finds four games from which to choose.

> ***What do you know! Nick Walton is back with the Wildcats already! I thought that hamstring injury was going to keep him out a whole month.***

The return of one of Hugh's favorite players makes him opt to see the local Fairview Wildcats. The screen shows that seats are available; but before he books, he calls his friend, Fred, on the screen's built-in "video phone" facility. Fred greets him with a smile, and quickly agrees to go. Hugh suggests Fred come to his house first for some homemade chili; Fred accepts.

Hugh books two seats at the Wildcats' game, and tells the TV-video unit to pop the two tickets out of its printer.

Time to turn to household chores.

He runs out of paint while finishing the staircase. Always mindful of his limited budget, Hugh returns to the video screen to check around for sales. Real Value, up near the church, has a sale on the right shade. Rather than automatically ordering the paint for delivery, Hugh decides first to see if there are any special activities going on at the church that might appeal to him.

This afternoon, the church's electronic bulletin board tells him, the kids will be preparing for their Columbus day pageant. Hugh loves to donate his electrician's expertise to a good cause; he decides he'll drive to pick up his paint—swinging by the church on the way.

On the way to the church, the car seems sluggish; he makes a mental note to check into it. At the church, he finds that the pageant calls for no special lighting, although they plan to use almost all the power the place is wired to handle. Hugh suggests an alternative lighting scheme, warning the stage manager that she might have some disappointed kids and parents if she's not careful.

Back home, he sets the stove for dinner, finishes the painting, and relaxes in front of the TV-video screen to catch up on the national football news. Then the screen alerts him that he has a call coming in; it's his daughter Jill. Hugh suspends his program to talk with her. At once he notices that she looks unusually tired.

> ***Something's troubling her, and I'll bet it's more than just work. She always talks like there's nothing bothering her. I wish her mother were here—she'd get the truth out of her.***

Steve, Hugh's 11-year-old grandson, pushes his way into the video picture to show Hugh his model airplane. Sometimes the engine works, and sometimes it doesn't, he complains. That's a sign of a short, Hugh says, but the wiring seems to look okay from here. Hugh promises to examine the plane thoroughly the next time he comes over to Jill's house.

After the call, he checks on dinner. Fortunately the stove has the "smarts" to shut down by itself, or the meal would have been ruined. Hugh flicks off the screen, which will divert any further calls, except emergency messages, to the automated answering service.

SATURDAY October 9 1999

Checking his screen for messages the next morning, he reviews a call from grandson Steve, who had called to say he'd fixed the plane all by himself, and that they could play with it as soon as Grampa came over.

Hugh also had a call from Fred, informing Hugh of a pay-per-view special offer on a four-game package of Fairview Wildcats games. Generally Hugh prefers to go to the games rather than watch them on the screen, so he can "smell the hot dogs." But he is finding it increasingly easy to opt instead for a vivid view of the game from the comfort of his living room.

In another message, the union confirms that Hugh will be working the convention next Saturday and Sunday. At the rate they pay, he observes that he will net $210 after deductions, or an extra $3.10 a month on the pension. He decides to ponder that choice a little.

He calls Fred to chat about the four-game offer. Fred, too, prefers to go to the stadium, but "the pay-per-view price is very good if we commit now, and the weather could turn bad in November anyway." But they can discuss that over their chili.

The stairs have dried, so Hugh reinstalls the nonslip treads. Going to the garage, he plugs the diagnostic line into the car. The system monitor says the batteries will need an overhaul within a month—explaining the car's sluggishness.

> ***These electric models are more reliable than gasoline, but they aren't cheap. I'd better take the cash for the convention work.***

He drives to Jill's house. Steve corrals him immediately to play with the model plane. When Hugh asks him how school is going, Steve eagerly pulls his grandfather over to the screen and proudly summons up a display of his achievement ratings. He's doing well in everything except civics.

> ***He can catch up on that through extra screen tutoring; he's just too squirmy to sit still for it. Maybe I'll offer to sit with him to help him through it.***

Back home, he tells the stove to cook the chili and then put it on "warm." Fred arrives at 5 o'clock—looking haggard. His appearance worries Hugh, who fetches the "life signs" bracelet his wife used to use. The bracelet indicates that Fred's vital signs are in the normal range, but Hugh remains unconvinced that Fred is up to going to the game. He calls up the game agency on the screen and trades in his two tickets in exchange for a home viewing of the game. Making the last-minute switch costs a premium, but Hugh decides it's for the best.

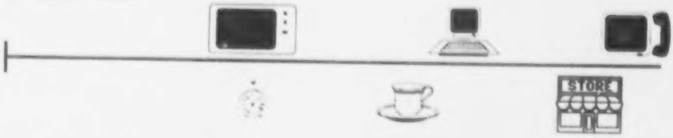
> ***Maybe I should consider getting that four-game package after all. It'll be easier on Fred. And, hey, I'm not getting any younger myself.***

In the text	Interpretation
TV-video unit	TVs have evolved to combine a number of different functions, including "video phone," video displays of information, and more. People commonly refer to these combined TV-video-phone-stereo-radio units simply as "TVs," "TV-video screens," "screens," etc.
the utility channel	TV-video units include one or more utility channels through which to access various video-based services, such as video-displayed information about jobs.
There's a convention	Union employment agency works like an "electronic union hall," but more advanced: it tells where the jobs are, and allows him to apply instantly and get confirmation of his call. The agency's computer "knows" it is Hugh calling because it recognizes the number from which he called.
he finds four games prints out the two tickets	Utility channel also accesses a wide range of entertainment services, including ticketing for sports. Events usually offer video background information if desired; in this case, Hugh chooses to watch. He "freezes" the ticketing service in mid-transaction and calls Fred; they both are able to view the same game information simultaneously as they talk. Hugh tells the TV-video unit's built-in printer to print out the tickets he has just ordered.
check around for sales activities of the church	Many retailers list their products and prices electronically, making it easy to do comparative shopping directly in one's own home. Again Hugh suspends a transaction in order to get more information: does he want to drive to the store, and visit the church at the same time, or simply have his merchandise delivered? To decide, he consults the electronic church calendar of events, another item on the utility channel.
screen alerts him	Viewing a non-scheduled program from a sports news service, Hugh is interrupted by his daughter's call. He suspends the review to see and talk with her. He knew it was she calling, based on computer recognition of her telephone number.
she looks tired	The video phone's picture is crisp and sharp enough to let Hugh see the fatigue in his daughter's face—and the wiring of his grandson's airplane.
stove has the "smarts"	Smart stove uses a sensor to detect when to protect an item from overcooking. This and other "smart" appliances can be commanded from a distance—i.e., over phone lines.
flicks off the screen	Hugh can control the degree of interruptability. Screen can receive inbound calls, allowing emergencies only to penetrate. Other callers would be told that Hugh is unavailable; please leave a message.
Checking screen for messages	A display on the screen tells Hugh who has called, at what time, letting him review the messages in whatever order he prefers. The messages may come in various forms: voice; video; electronic mail.
plugs the diagnostic line	The electric car has a built-in self-diagnostics unit that saves taking it to a service center for trivial problems.
display of his achievement	Hugh's grandson uses the household screen to access the school's public data base of academic records. Students may obtain tutoring help in the form of library videos or "live" assistance from teachers on call.
"life signs" bracelet	The inexpensive device checks pulse and blood pressure; the user may obtain a more informed diagnosis by calling the doctor's office and feeding the bracelet information over the telephone lines.
trades in his two tickets	Because Fred is not up to attending the game, they electronically cash in their tickets in exchange for a pay-per-view showing of the game. Hugh will be billed extra for making the last-minute change.

TOBY

Truck driver

- Age: 26
- Lives with wife, Connie, and their one child, Toby, Jr., in outskirts of Wilmington, Delaware.
- Lower-middle income from employment as delivery driver for local manufacturer.
- Did not finish high school. Hopes to take advantage of company training in order to improve career prospects.



FRIDAY, February 4, 2005

The alarm clock rings at 5 a.m. He hits the snooze button, which will let him sleep for 10 more minutes while the coffee is being made.

Sipping his coffee, he gazes at the little office monitor screen, resting on the kitchen counter, which is displaying his schedule for the day. Having formed a quick mental picture of where he's going that day, he changes the channel to the sports station. The Philadelphia 76ers will be at home this weekend, playing the Knicks—a great matchup. The announcer offers a limited-time ticket special. Toby hesitates, then shrugs and hits the "order" button on his remote control unit.

The work day begins with an uneventful drive into town. Once at the depot, he remote-starts his rig and then checks the screen for any schedule changes. He notices that he has to go to class late this afternoon—all the way across town from his last delivery. He drives to the warehouse to pick up his load of deliverables for the day. The warehouse is jammed: a loader conveyor has died, and the repair technician hasn't yet arrived to fix it. While waiting, Toby ponders whether the company's retraining class will really give him a chance at advancement.

> ***Those repair technicians get better pay, but they spend almost as much time on the road as I do. And where do I go from there? The old man was right: I never should have dropped out of school.***

By 7:30 the loader is fixed—but now the freeway is mobbed. The depot screen shows a traffic mess on all good routes except Route 40, and the truck ban there won't lift for another hour. Toby resequences the deliveries to minimize his road time.

The first two stops are regular customers. The third is a new customer whose location is unfamiliar to Toby; using the truck computer, he summons up the map function. The routing system suggests he take Route 40—which, by now, trucks may use.

The morning proceeds apace. At 11:30 he stops at a gas station, getting out to stretch his legs. Going to the videophone booth, he calls his wife, Connie, to consult about plans for the evening. Yes, she says, we're going to little Toby's soccer game tonight, and yes, Bill and Bonny Miller will be there too.

He can see that Connie is busy putting lunch on the table for Toby, Jr., so he doesn't linger. Next, he calls Arby's to see what the lunch special looks like. The roast beef looks too good to pass up; he orders it and returns to the truck, picking up his lunch a few minutes later at the drive-through window.

He finishes his remaining deliveries by 3:30—which should mean that he has plenty of time to get to class. En route to the training center, however, Toby receives a warning from the computer of stalled traffic ahead. It seems that a truck jackknifed on the bridge.

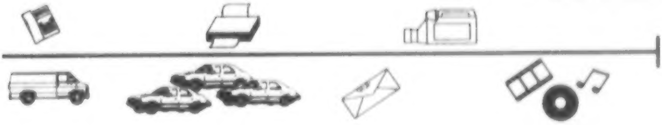
Toby calls the training center to let them know he'll be late. The instructor tells him to listen to the class over his truck speaker, and pick up what he can. The lesson, Basic Robotics Maintenance, is interesting enough, but Toby wishes he could see the the graphics and diagrams to which the instructor keeps referring.

By the time traffic finally starts moving, the class is almost over; the instructor agrees with Toby that there's little point in his trying to get to the training center this night. Toby can finish the lesson at home; the instructor will electronically mail the graphics to his home screen.

The workday over, Toby goes home to a quick dinner. Even though the boy loves macaroni, Toby, Jr. is—as usual on game nights—almost too excited to eat.

This time, Toby, Sr. feels much the same way. He has been waiting for the right moment to try out the new Videocorder his parents got him for his birthday. He knows they'll be thrilled to see their only grandchild in action on the field. As for himself, he can't wait to play with his new "toy."

Toby and Connie enjoy the game in the company of Bill and Bonny, whose daughter



Tami is also playing. After Tami scores a goal, Bill insists Toby mail him an electronic copy of the video.

Back home from the game, Connie shepherds Toby, Jr. upstairs for his bath and pajamas. Toby, Sr. sips a beer while watching the late news; then, during a commercial, dispatches copies of the video to his parents in Alabama and to Bill Miller across the way.

SATURDAY, February 5, 2005

Toby sleeps till the luxuriously late hour of 7 a.m. Connie greets him with coffee—and reminds him about the yard work, the washing machine leak, and the 76ers game this evening.

After breakfast, Connie settles down in front of the video screen in the kitchen to do the grocery shopping. Using the wand, she quickly sorts out the specials at several local supermarkets and compiles her list. It turns out that the Safeway store on DuPont Drive has most of the loss leaders she's interested in; she sends her entire order list there so Toby won't have to make a stop at more than one store.

When Toby comes in from cleaning up the yard, Connie lets him know that a videofile has come in for him. That would be the graphics from the class yesterday; Tony decides to look at the material tomorrow after church.

Aunt Jessie comes over for supper and stays on to take care of Toby, Jr. so that Dad and Mom can go to the 76ers game by themselves. Back from the game by 10 p.m., Toby and Connie invite her to stay on for a movie, but she declines, citing her concern about her cats. Toby suggests facetiously that she call them up and order them to stand in front of the videophone so she can check on them. She says she would—if only her cats would obey her in the first place.

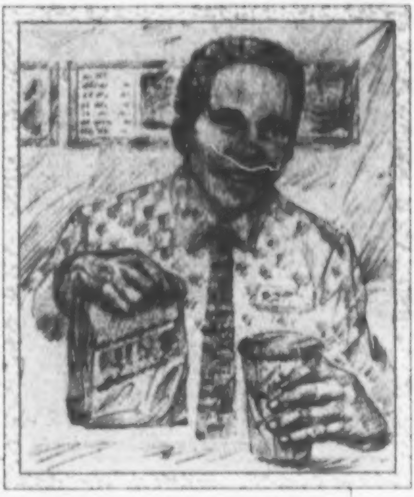
Toby and Connie discuss which movie to watch, finally settling on Michael Jackson's latest production. But first Toby gives his parents a call to see what they thought of the video of Toby, Jr.'s soccer game.

> ***The folks look happy; Mom looks great. I knew they'd be mad at me if I didn't put that Videocorder to good use pretty soon.***

The new Michael Jackson extravaganza begins. Toby, tired from his labors, finally closes his eyes and simply takes in the sound track.

In the text	Interpretation
snooze button	Alarm clock is wired to designated home appliances, so he can turn on the lights and make the coffee without leaving bed
office monitor screen	It is increasingly common for companies to provide their employees with small TV-video units especially designed to serve business purposes.
displaying his schedule	Toby can access information from his employer via this semi-customized TV-video unit's utility channel.
hits the "order" button	Many TV-video remote control units have "order" buttons, to make it easy for consumers in an age when a large and growing number of products are sold directly over the TV-video screen.
loader conveyor has died	The loader conveyor is a robotic stock picker and loader for the trucks that make the deliveries.
screen shows a traffic mess	The truck's computer displays, on the lower portion of the windshield, a translucent map of main routes, showing the busy routes in red. Toby gives his truck computer a verbal command, "Traffic Re-Order," which prompts the machine to resequence his deliveries as efficiently as possible, given the locations concerned, the traffic patterns, and available routes.
Going to the videophone	Public videophones are rapidly replacing standard public telephones.

In the text	Interpretation
receives a warning	The truck computer monitors regional traffic conditions; it also "knows" Toby's location and destination. Cross-referencing this knowledge, it can warn him of impending roadblocks.
listen to the class	Toby can listen and respond orally to the training from his truck cellular radio. Motion videos and complex graphics are not available over cellular links due to bandwidth limits.
electronically mail the graphics	The instructor sends copies of the graphics to Toby's home for viewing at his leisure on his own TV-video screen.
the new Videocorder	The portable video camera of 2005 is a common consumer item, though it ranges widely in quality, capabilities, and price.
dispatches copies	By sending copies of the video at night, Toby may take advantage of the cheaper overnight "bulk rates" for video transmission.
Using the wand, she sorts	Connie scans the video displays of various supermarkets, looking for sales on items she needs. Thanks to the wand, she does not need to do any typing or handwriting of a list; using the wand, a small metal device, she points to things she wants and stores a note of them on her own electronic list.
Michael Jackson's latest	Most families have access to first-run movies and archives of previous works.



LENNY

Restaurant manager

- Age: 39
- High school graduate; on-the-job training
- Middle-class income from job as manager of a fast-food restaurant; wife, Shana, works part-time at an architectural firm
- Two children: Tiffany, 17, who has been deaf since birth and DeWitt, 14, in normal health
- Family resides in an apartment in Washington, D.C.

FRIDAY, May 3, 2002

Lenny darts down the stairs and into the kitchen, the dog just ahead of him. He pours orange juice as the can of dog food rotates under the electric can opener. He feeds the dog and dashes upstairs without pausing to drink.

> ***Better get in the bathroom before the kids do, or it's all over.***

Thus begins another typical day in the life of a fast-food manager.

Tiffany is waiting at the bathroom door when Lenny comes out; they sign good morning to each other, and he kisses her on the cheek.

Back in the kitchen, he switches on the office monitor that perches on a shelf. In a moment the screen displays the logo of Fast Chick Inc., his employer. "What's happening?" he says, and turns to his orange juice. Instantly the screen displays a status report of conditions at the 24-hour-a-day restaurant. While downing a howl of cereal, Lenny scans other pages of the daily report, such as yesterday's total sales, inventory status, forecast of today's expected usage, and his employees' work schedules.

His wife, Shana, joins Lenny in the kitchen, and asks him if he'll be at the restaurant all day; she might want to reach him. He notes that she can always get a message to him at the restaurant; so what's the difference? "I just may want to see your face, that's all," she says. He shrugs at her mysteriousness and prints out a copy of his daily schedule for her.

DeWitt enters the kitchen, immediately calls out "What's happening?" with great pomp, and starts laughing. Obediently the screen displays the restaurant status report again.

Lenny bids all goodbye and drives to work. He realizes that he likes having the office monitor at home: the status report gives him a little advance warning about the shape of the daily hurricane at the restaurant.

> ***Nothing worse than getting to that place and finding two hundred angry Cub Scouts demanding ketchup for their french fries. That sure was a nightmare that day.***

It was the Cub Scouts incident that had persuaded him to install the office monitor at home, over Shana's objections that he was letting work invade their private lives. But now she's used to it, and likes being able to keep track of Lenny's whereabouts. The screen provides one more way for him to communicate visually with Tiffany. And DeWitt still gets a charge out of the voice-activation feature, which he shows off to every friend he brings home.

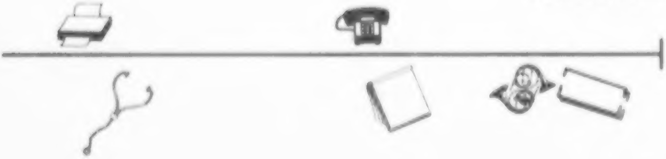
It's a fairly normal fast-food day, with the usual assortment of minor crises to manage: two people don't show up for work; one of the milkshake blenders breaks down; a customer demands a refund because there's no lettuce on his sandwich.

Another customer wants to be assured that the chemical additive MSG is not present in any Fast Chick food. Lenny leads him to one of the monitors in the kitchen, which displays a list of all ingredients in the food. He offers to let the customer send an electronic message directly to Fast Chick headquarters in Dallas, but the customer is assuaged and returns to his table.

In between trips to and from the front counter, Lenny performs his other managerial duties from the relative quiet of his little office, using the big screen to make necessary reports to corporate headquarters.

On deadline to finish one such report, he tells the screen to "hold calls," which prompts the system automatically to divert all incoming calls except emergencies.

Often Shana will call him at work to tell him about some new medical development that she's heard about. She is constantly watching the health shows in search of new treatments for the deaf, and when she finds a new item, she usually can't wait to share it with Lenny.



Gotta hand it to her: that woman never gives up trying.

But feeling pressured today, he decides that any such call can wait till after hours.

Moments later, a beep from the screen tells him an emergency call has come in. He interrupts writing his report to take the call. It's Shana; she looks excited. Suppressing his annoyance, he asks her what's up. Shana says that Tiffany has something to tell him; Lenny's daughter then appears on half of the split screen. Tiffany tells him the news, her fingers signing so fast that he can barely follow: she has won a full scholarship to Gallaudet University!

Tears are streaming down Shana's cheeks; it's a dream come true for her. She starts laughing, however, as she informs Lenny that he, too, is crying.

So that's what Shana was being mysterious about. Tiffany must have been expecting a call from the university today.

For a few minutes Lenny finds himself utterly unable to work. He reflects on all the anguish they've endured, watching their daughter struggle with her handicap. He also considers, with pride, the extent to which she has triumphed.

I'm glad she was born when she was. If she'd been born in Dad's day, she'd probably have spent her life in a machine shop, like poor old Aunt Julie.

The rest of the workday passes quickly; eager to get home on time, Lenny consults the traffic report on the screen and then commands his monitor to "sign off."

At home, all are abuzz over Tiffany's scholarship. Shana has called or left messages with every relative she can think of, and Lenny sees Uncle Joe's face on the screen when he joins Shana and the kids in the living room.

Lenny greets Uncle Joe and asks him how things are going in Detroit. "Same," he says. "Congrats to your little girl." Moments later there's a knock on the door; someone delivers a bouquet of flowers and a pizza. "They're from me," says Uncle Joe with a smile.

Lenny and Shana agree that they must do something special in celebration of Tiffany's achievement. Tiffany indicates that she would love to see a show.

They consult the screen to find out what major events are taking place in town: exhibitions, concerts, ballets, theatre. The easiest route is to go to a movie that's captioned for the hearing-impaired, but that's too much like what they do every day at home. DeWitt argues in favor of going to see his favorite band, Willy Nilly and the Indifference ("great stage show," he says), but he is firmly outvoted.

Dance is Tiffany's passion; catching her attention is a preview of the Senegalese national dance troupe, which performs at the Kennedy Center tomorrow night.

Though they've lived for years in Washington, none of the family has ever been to the Kennedy Center. "That's half the reason Tiffany wants to go," Shana says.

Lenny requests information on the Kennedy Center. The screen divides, one side showing a seating layout for the concert hall, the other side listing the center's schedule and seating prices. He orders four tickets for Saturday's opening of the Senegalese dancers, choosing the best seats in the house, and orders that the tickets be printed out on his home printer. He pays for the tickets by debiting the money directly from the family's vacation savings account.

Oh, well—this is an important occasion; we'll scrounge up a few bucks for vacation later.

SATURDAY, May 4, 2002

The only activity that had been scheduled for this day had been DeWitt's soccer game in the afternoon. The Kennedy Center tickets, however, promise to make it a somewhat hectic day after all. Shana wants to make a formal occasion of it; she books herself and Tiffany for the hairdresser, and orders corsages from the local florist as well. Lenny irons his best suit and, after several threats, persuades DeWitt to iron his own, too.

Lenny takes DeWitt to his soccer game as the women go to the hairdresser. DeWitt turns out an excellent defensive performance; during the three quarters he plays, he makes four good blocking kicks. His team wins. But now it's after five o'clock; the dancers start at 8:00. Lenny hustles DeWitt into the car and they drive home without delay.

> ***I do more running in the course of a normal day than DeWitt does on the soccer field.***

The apartment is a flurry of activity. Lenny and DeWitt shower, dress, and eat sandwiches, the corsages arrive as Shana puts on her scarf; Tiffany engages in several more excited videophone calls. The dog sits in the kitchen and barks, demanding his supper. Lenny tells Shana he wants an electric can opener that's activated by the dog's barking.

They pile into the car at 7:30. At 20 minutes to eight, Lenny checks the car's monitor for parking at the Kennedy Center, discovering to his chagrin that the parking lot is already full. However, parking is still available at the Watergate Complex nearby. Lenny heads for the Watergate, leaving the car for valet parking; the four make a mad dash through the hotel and arrive at their seats in the Kennedy Center with five minutes to spare.

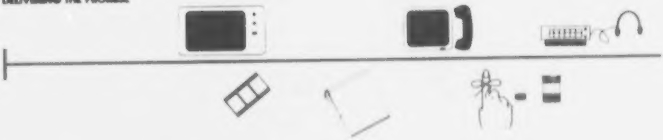
In the text	Interpretation
they sign good morning	Since his daughter has been deaf since birth, Lenny and his wife have long ago mastered manual sign language, which is second nature to them and "natural" to both children.
the office monitor	It is increasingly common for companies to provide their employees with small TV-video units especially designed to serve business purposes.
"What's happening..."	The office monitor operates in part by means of voice activation. It recognizes certain spoken words as commands for performing certain functions. Voice activation, becoming commonplace for many consumer applications, varies widely in terms of sophistication; i.e., some machines will only recognize a few words, uttered by a particular speaker; other machines can understand a large vocabulary of words, as spoken by nearly anybody.
see your face	Shana may want to talk to Lenny on the videophone, rather than sending him an electronic message, for instance.
prints out a copy	Lenny can print any data from the office monitor on its built-in printer.
DeWitt enters the kitchen	The office monitor is "trained" to respond to any voice—not just Lenny's—that calls out "what's happening?"
list of all ingredients	Restaurants are required by law to make ingredient information available. Customers may even get the information by phoning a restaurant and asking to have the ingredients listed on their home TV-video screens.
message direct to Fast Chick	The restaurant's office monitor can communicate instantly with the company's Dallas headquarters via electronic mail.
using the big screen	The screen Lenny uses at the office is a full-sized TV-video screen that combines all of his business functions with the normal home screen functions (e.g., TV, radio, videophone, etc.).
"Hold calls"	By voice command, Lenny tells his screen to divert all non-emergency calls to a messaging service.
watching the health shows	The TV-video unit gives viewers access to a vast number of programs, both general and special-interest, and various ways—indices, voice-activated subject search, etc.—to sort through them quickly.
half of the split screen	The standard TV-video unit can divide its screen into two or more sections for the simultaneous display of different images—e.g., the faces of two people who are calling a third person.
Gallaudet University	Gallaudet, located in Washington, D.C., is one of the world's foremost educational institutions for the hearing-impaired.
she has triumphed	Tiffany has benefitted all her life from a growing number of products and systems designed to help the deaf. For example, she is able to access a world of educational services, special counseling, and other aids via the TV-video unit. The home screen makes it easy to communicate with others, since she can use sign language or other visual cues over the videophone.
Aunt Julie	Aunt Julie was deaf at a time when technological aids for the hearing-impaired were very expensive or non-existent. This fact severely limited her options in life.
the traffic report	The screen displays a map of the city, indicating areas of traffic congestion.
Uncle Joe	Uncle Joe, calling from Detroit on the videophone, has used his own screen to locate a pizza parlor and florist in Lenny's neighborhood, and have the products delivered to Lenny's place immediately.

In the text	Interpretation
[illegible] major events in town	The usual contents of today's newspaper "weekender" are available in mixed text and video form. Users of the service can pick through this advertiser-sponsored material and request more information when they want it.
[illegible] orders four tickets debiting the money	Lenny can order tickets for events instantly over the home screen, and either pick up the tickets at the event or have them printed out at home. He may pay for the tickets automatically in any of several ways: in this case he decides to raid his vacation savings account.
[illegible] orders corsages	Using the screen, Shana can look at the corsages the florist has to offer before making her purchase and ordering delivery.
[illegible] check... for parking	Theater owners, concert hall managers, merchants, etc., sponsor a parking locator service to encourage consumers to visit their premises. The car monitor displays available parking within the general area of the user.

THEONA

TV news copywriter

- Age: 37
- Divorced mother of two young children
- Middle-class income from position as news copywriter at local TV station
- Lives in own townhouse in Arlington, Virginia



FRIDAY October 31 2008

It's a slow news day; Theona gets to leave work at a normal time for a change. She toys with the notion of indulging in a little shopping, then dismisses the idea and hurries home to Jimmy, Rachel, and the babysitter, Gretta.

> ***Maybe just this once I can let Gretta leave on time herself, poor thing. She ends up waiting late for me practically every night.***

Theona gets home to find everyone in the living room: Gretta singing to Rachel, and Jimmy entranced in a video game. Gretta reports that Rachel seems to have licked that cough she had last night; her condition will not jeopardize the family's planned trip to Boston the next day.

Theona decides to have dinner delivered. She persuades Jimmy to let her share the screen for a moment so she can order. She calls Mama's Natural Diner and glances over the menu tray; her eye is drawn at once to the eggplant parmesan. For the kids she selects the more conservative meatloaf and mashed potatoes combination.

The restaurant order clerk knows Theona well. "Having it delivered, as usual? Very good, that'll be an extra two dollar billing to your video charge. How are the kids doing?"

Fine, says Theona. Concluding that call, she is eager to turn to the screen's news channel. The election season is at its peak, and she wants to see all the campaign coverage she can.

The kids aren't going to sit still for that, however, so Theona decides to get them settled in the playroom with a movie as they await the arrival of dinner. She scans the new releases at VideosRus, but nothing looks appealing to Jimmy. VideoClub has Rambo: Episode XXXI, which Jimmy immediately insists on seeing. Theona agrees, but firmly insists on ordering the G-rated version. She also orders the view-and-suspend option, so she can pry Jimmy away from Rambo while they eat dinner.

While the kids watch Rambo in the playroom, Theona sits in the kitchen yelling at the monitor as she scans the election coverage. Soon the screen is displaying campaign coverage from NY-TV.

> ***How come the New York stations have better coverage of our local issues than my own station does? I think I'll send the boss a memo about this.***

Jimmy and Rachel run into the kitchen, demanding a drink. Theona stops the video flow to accommodate them. Noticing that they're running low on milk, she scans the carton past the Listmaker on the kitchen counter before serving the kids. This routine action jogs her memory; she grabs the nearly empty bottle of children's cough syrup and runs it, too, past the Listmaker, pressing the "Remind" button in the same stroke.

The children eat their dinner hurriedly, eager to return to Rambo. Theona fails to stir up conversation with them about the election, and turns to the subject of their trip to Boston on the morrow. This subject elicits only slightly more interest.

> ***I love them, but I sometimes wish I had someone a little closer to my age to talk to.***

The kids finish watching Rambo, while Theona continues to browse over election coverage in the kitchen. She puts Rachel to bed at 8:30, allowing big brother Jimmy to stay up till 9:15. With the house finally quiet, Theona calls her mother.

Mother confirms that she'll be there to pick up Theona and the kids at the airport in Boston. Then she clears her throat. Theona knows this means a lecture is coming. Sure enough, Mother wants to know why Theona has not sent her more videos of Rachel, as promised. Theona reminds her of her hectic work schedule, coupled with the difficulty of raising two children by herself.

Mother pounces on the opening and begins again to suggest that what Theona needs is to meet another nice young man. Theona warns her to lay off the subject or she'll cancel the trip to Boston. Seeing the tears begin forming in her mother's eyes, Theona

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apologizes and turns brightly to the subject of their visit.

After the call, she makes herself a cup of tea. Once again, the screen is displaying news. Pursing her lips, she picks up the remote command unit and turns to the screen's utility channel. Letting out a deep breath, she calls Compatibles Anonymous, a dating service she has used before, though not for months.

> ***No need to update my file: my life's exactly the same as it was five months ago.***

The first eligible bachelor to appear on the screen happens to remind Theona of her ex-husband, Greg. At once she exits from the service and returns to the news.

SATURDAY November 1 2008

The children awaken Theona at 8 o'clock, having already been up playing for an hour. Theona hurries to put breakfast on the table, wishing she hadn't overslept.

> ***Now it'll be a rush to the airport, as usual.***

While the children are eating their cereal, Theona checks the screen for traffic delays on the way to Washington National Airport. It appears there will be one major traffic slowdown, due to construction. She checks to see if she might be better off flying from Dulles International, but the screen indicates worse traffic jams in that direction.

She then switches to the weather channel to find out whether she needs to pack any special clothing for the children—Rachel especially. The Boston weather report indicates mild temperatures through the weekend, with scattered showers.

The packing goes smoothly. Theona finishes with ample time to sip another cup of tea. She takes the opportunity to glance at her electronic calendar for the next few days to see what's coming up. She notices that there's a reminder about the Renoir exhibit coming to the Metropolitan Museum.

> ***Oh, yes: Gretta loves Renoir! Here's an easy way to get her Christmas present in advance.***

Having a few minutes to spare, Theona calls the Metropolitan Museum's store to see what Renoir books and prints it has available. She selects two prints, chooses framing for them, and requests that they be wrapped and shipped directly to Gretta's address a week before Christmas.

Theona daydreams about how the prints will look on the wall of Gretta's apartment.

> ***Gretta will love playing with different arrangements on her screen. I think she ought to go into interior decorating and be done with it.***

The flight to Boston is smooth and uneventful. On landing, however, Theona begins worrying whether she'd left the stove or the iron on. Her mother upbraids her for always being in a rush and forgetting things. With a sigh, Theona leaves the children with their grandmother, goes to a videophone booth, and dials her house. No alarms are signalling, but to be on the safe side, she disconnects all of the circuits except the outside lights, refrigerator, and heating.

I wish you didn't have to manage that big house by yourself, her mother says.

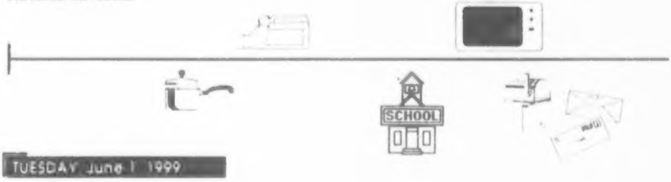
In the text	Interpretation
let her share the screen	The TV-video unit's split-screen capability enables Theona to make a videophone call to a local restaurant while son, Jimmy, continues to play video games on the other half of the screen.
glances over the menu tray	This restaurant has (optionally) an all-picture menu, which makes it all the easier for busy families to order from home.
extra two dollar billing	Charges for the food delivery are billed to Theona's video charge—a general-purpose credit arrangement. She could have used a debit account. Many restaurateurs use video order screens because even the home-delivery customers like the human contact: they prefer to see the person from whom they are ordering.
VideosRus... VideoClub	Many entertainment outlets can be visually window-shopped. VideosRus focuses on children's entertainment and learning.
the G-rated version	Most mass-market movies are produced in a selection of ratings for different audiences.
view-and-suspend option	Not only can Theona order a pay-per-view movie at a certain time and in a certain version, but she can select the option of being able to stop the movie at any point and resume watching when convenient.
yelling at the monitor	She is using a voice-activated screen that changes channels in accordance with her voice command. With her normal speaking voice, Theona can direct the screen to display any of countless sources of information connected to the public network. The screen can "hear" her fine without her yelling, but her political enthusiasm gets the better of her.
scans carton past Listmaker	The Listmaker, an increasingly common kitchen device, reads the bar codes on product packages, adding items to the grocery shopping list. Theona can print out her list on paper, or send it electronically to a store for the filling of her order.
grabs the nearly empty bottle	The Listmaker also can feed critical reminders into a person's electronic calendar—for instance, telling Theona to pick up more cough medicine the next day.
more videos of Rachel	The making and sending of home videos is becoming as routine as the sending of photos once was.
Seeing the tears	The videophone's high-quality image reveals considerable detail.
Compatibles Anonymous **update my file**	Matchmaking services are among the many popular video-based services of the time. The common approach is for the customer to make a video "file" of herself/himself, which is updatable at any time, and then scan the videos of others who might be compatible partners. The customer can contact the potential date in any of several ways: e.g., through the service itself, or through an electronic mail message.

In the text	Interpretation
traffic delays on the way	Through her TV-video unit, Theona can check the traffic conditions at each of the local airports; and, depending on the airline she has chosen, the availability of seating, etc., she can switch her point of departure at the last minute.
weather channel	Among the information services readily available over the TV-video screen are weather reports that can zero in on any region in the country.
Metropolitan Museum's store	Video retailing shows crisp, clear views of products—in this case, prints of masterpiece art. The video retailing system can tell an inquiring customer instantly whether a product is in stock because it includes an automatic inventory update feature. The retailing system also lets a customer buy related services, such as framing, wrapping, and mailing, all over the home screen.
Gretta will love playing	Gretta likes to "redecorate" her home, using a commercial service that presents a video "mock-up" of her home, furnished and decorated in various ways according to her taste. This image processing service requires a video record of the rooms in question; Gretta made that record with her videocamera. The point of the service, from the retailers' point of view, is to sell furniture, carpets, drapery, etc.; but many customers simply enjoy browsing through these highly individualized "video catalogs."
No alarms are signalling	From the airport in Boston, Theona can call her townhouse's central circuit control. Once the system has validated her identification number, it allows her to turn circuits on or off, as she wishes, from a remote location.

JOYCE

Homemaker

- Age: 44
- Lives with husband, Jay, and two elementary-school-age children in their own home in Trenton, New Jersey
- Middle-class income derived from husband's employment as a statistician for the state government, supplemented by investment and interest income



TUESDAY June 1 1999

She wakes as dawn begins streaming across the sky. The children are still quiet; but Jay has already left for the office. Hopefully, she switches on the screen in the bedroom to see if he has left her a message. He has. She brushes her hair while watching him say good morning to her on the screen. She giggles as his message turns romantic; she plays the message through again, then erases it, lest the children should find it.

She begins her morning household routine by setting the temperature and security controls for daytime. Last year's wave of burglaries in the area had nearly convinced Jay to seek a job transfer and relocation, but the security system allayed Joyce's fears sufficiently that he put the idea aside.

Joyce and the kids are watching the Today Show over breakfast when the program is interrupted by a flashing message from the school: classes have been cancelled this morning due to a malfunction in the building's ventilation system. To her surprise, the kids are less than enthusiastic about this turn of events.

> ***That's odd. If I were their age, I would have cheered.***

The morning shouldn't be a total loss for the kids' education, Joyce decides. She scans the video menu for some suitable programs, picking and locking in one entertainment video, sandwiched between two science videos from the school library.

With the children occupied, Joyce takes care of the morning dishes and vacuuming. They'll have a casserole for dinner; she removes from the freezer a dish she had prepared last week, puts it in the oven, and tells the stove she wants to serve at 6:30.

Joyce is the household money manager. An ad in the paper about investment services reminds her that she wants to look for alternative ways to handle their savings account.

With the children watching the living room screen, she uses the screen in the den to shop for certificates of deposit. She finds two CDs at an attractively high rate; the background record on both institutions appears solid.

Before moving the cash, she decides to check with Jay to ask if he's seen a better deal. She calls him at his office and shares the financial information screen with him. "Sounds great, honey, let's go for it," he says. Then he excuses himself, noting that "I'm on my way to a meeting."

As soon as she disconnects, she realizes she'd forgotten to tell him something. On calling back, she is notified that he is away from his desk, please leave a video message. She replies to his morning video greeting—and marks it "confidential."

> ***I sure don't want his boss to see that one.***

Then she rings off and completes the transfer of their savings account cash into CDs.

She figures the children must be into mischief by now—but finds that they're still absorbed in the video on genetics.

> ***That's great; I'll call Mom so we can start planning for the family get-together over Fourth of July.***

She returns to the den and calls her mother in Vermont. Mother suggests they include her sister, Judy, in the conversation, since she'll be coming in from Chicago. Joyce calls Judy at her office, and the three proceed to discuss holiday plans. Soon they're laughing about their hilariously disastrous family reunion of 1996, the year Judy invited all of her in-laws. Joyce's sister notes that she still has a video of the occasion. Mother shrieks and insists Judy transmit her a copy at once.

Joyce, meanwhile, receives another interrupting message from the school. All classes are suspended for the day, but the school will re-open tomorrow on schedule. Teachers will be dispatching assignments to their pupils in a few minutes.

Joyce's mother considers this arrangement grossly unfair to her grandchildren, saying that the school should simply let the kids have the day off. Joyce decides to exit on this note, and turns the call over to Judy.

60 70 80 90
ENERGY MANAGEMENT

School assignments for the kids arrive on the screen a few minutes later. Joyce doesn't bother to print out copies, knowing that the kids are quite comfortable doing their homework directly on the screen.

She makes them soup and sandwiches, then returns to the den to do her aerobics session. She has found that she prefers exercising in the middle of the day rather than before breakfast, as she used to when Jay didn't have to get to work so early. The aerobics class over, she goes to the kitchen and switches the screen to her gourmet diet program. She enjoys the recipes, which are both inexpensive and low-calorie, and she finds the chef entertaining.

Her current diet seems to be working, she notes with pleasure. She finds that she can now slip into that maroon dress that had been too tight last winter.

This discovery prompts her to have a look at Hecht's video catalog, and this year's winter fashions. Her eye is drawn to a particular cocktail dress: not practical, but why not try it on anyway? She simulates the dress on her electronic mannequin, and turns the mannequin around slowly. With a frown, she decides she needs to lose two or three more pounds.

She wants to go for her usual afternoon walk, but it's rather drizzly, and she isn't sure she should leave the children alone anyway. Instead she calls her friend, Sally, for a chat.

She notices Sally's red, watery eyes and asks if she has interrupted Sally's favorite soap opera. Sally says no, she's been crying because she has a bad earache; maybe a sinus infection. Joyce urges Sally to use the medical channel and see if she can get some quick advice. Sally says maybe she will, though the pain's not as bad now.

The worst thing, Sally says, is that her husband, Tony, was going to take her to the symphony and now they might have to cancel. She'll miss hearing The Magic Flute, her favorite Mozart piece. Joyce reminds Sally that she can always catch the whole performance on the screen later.

The kids have finished their homework and turned it in already. Impressed, Joyce gives them a treat, then bundles them up and lets them play in the backyard a while. At 4 o'clock she joins her bridge club on the screen, playing for an hour. Her game concluded, she decides to check the electronic mail box. Scanning the list of items, she notes that they've just received their quarterly dividend on the family stock account.

I wonder if there's enough in there for us to buy our yacht yet.

Out of curiosity, she inquires about the balance of the stock account. It's far from enough for a yacht, of course, but she's pleased to find that it's higher than she thought it was.

Those nickels and dimes add up.

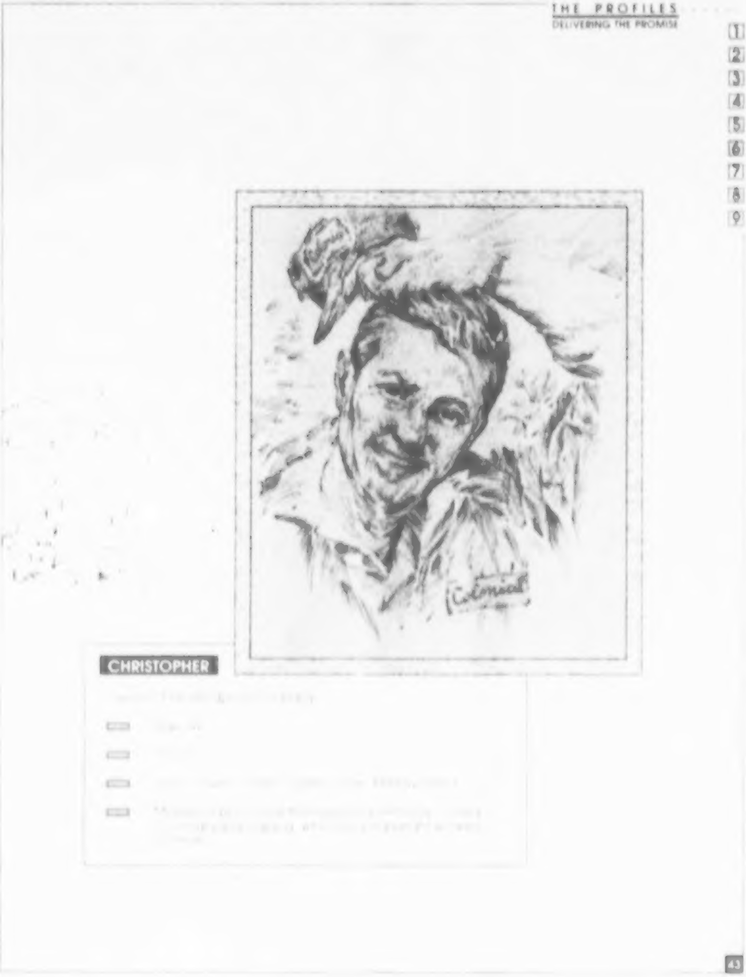
Jay arrives home promptly at 5:30. She makes him a martini and lets him unwind in the den, enjoying his news menu. The solitude always helps him relax after a day's work, and she makes a point of keeping the kids occupied with video games during this hour.

The family has dinner, and then the kids turn to their toys and other amusements. Joyce and Jay linger at the table in conversation, finally rising to put the children to bed. Soon they retire themselves, Jay suggesting they catch a movie. Joyce proposes the Tom Cruise remake of The Old Man And The Sea. Jay says fine—and orders the R-rated version.

In the text	Interpretation
left her a message	Her husband, Jay, leaves a video of himself greeting her good morning.
temperature and security controls	The home is equipped with a smart thermostat that applies a contour of temperature settings appropriate to the time of day. This system keeps the home comfortable, while saving energy. The security system includes alarms that notify the police automatically if an unauthorized person enters.
message from the school	The school, which may at any time need to reach parents in an emergency, can transmit a "blanket" message electronically to the screens of all parents who wish to be so notified. An automatic signal will tell the school which homes did not receive the message; authorities will try to contact these parents in another way.
suitable programs, picking and locking in	Joyce has a degree of control over what the children may watch, and has access to the school library's extensive video collection.
tells the stove	With the touch of a control panel, Joyce can tell the stove to defrost a dish, bake it until done, and keep it warm until serving time. Some stoves can perform these functions via voice commands.
shop for certificates	The home screen is a shopping center for, among other things, financial services. Joyce can compare the latest rates of many institutions quickly, and view public information about the institutions' assets, etc.
background record	
shares the financial information screen	Joyce can show her husband, at the office, the same screen of information she's viewing at home in the den, and they can discuss the information while talking to each other.
leave a video message	Answering machines can record the picture portion of a videophone call; or, if a person is not calling from a screen-equipped phone, simply record the caller's voice. The caller also may indicate that a call is "confidential," "urgent," etc., as a signal will so inform the receiving party.
transfer savings account	Consumers can conduct a wide range of financial transactions instantly over their home screens.
video on genetics	In her surprise at her children's interest in the science video, and at their reluctance to stay home from school, Joyce betrays her age. Thanks in part to the sophisticated and colorful computer and video systems of the 1990s, the line between education and entertainment has blurred considerably. What has unblurred is the picture quality. Their high definition screen conveys far more information, in a more colorful, vivid way, than the old grainy pictures Joyce knew as a child. The power of high definition imagery has made video an effective and widely used medium for instruction in the physical sciences.
include her sister, Judy	The three women can talk on the videophone together, from three different locations, each seeing the other two.

In the text	Interpretation
Judy transmits her a copy	Sending a videotape over the phone line is a simple and routine action.
turns the call over	Even though Joyce started the call, she doesn't have to conclude it. She can transfer the billing of the call to her sister at any point, so that she can hang up and let her sister and mother continue their conversation uninterrupted.
doing their homework	The children can use a full-sized keyboard for writing their assignments on the screen, or they can use a "wand," a "mouse," or other such devices that enable a person to enter information on the screen simply by pointing. Many households do not have a full keyboard at all. Others do: consumers can use their screens as "typewriters," word processors, etc.
prefers exercising	Joyce can select from a huge number of exercise and diet programs, choosing the ones best suited to her, and watching them when she wants.
Hecht's video catalog	As with a printed catalog, the consumer can view a video catalog at her own pace, lingering on items or skipping past them, etc., and "clipping out" items for storage in her own videofile if she chooses. She may order directly from the catalog, paying for an item electronically and having it delivered.
electronic mannequin	The more sophisticated shops have introduced "electronic mannequin" service, which is proving to be an extremely powerful sales tool. Joyce has allowed Hecht's to take a holographic three-dimensional picture of her, which it stores in its videocomputer for use in "modeling" clothing on the screen electronically whenever Joyce feels like home-shopping. (The three-dimensionality of the picture enables Joyce to "turn it around" on her screen.) The chic stores in New York have gone a step further, providing video customers with tactful visual recommendations of clothing styles and cuts that would be the most flattering to their figures. Plastic surgeons use similar technology to help patients decide how they want to look after the operation.
Sally's red, watery eyes	The screen conveys great subtlety of image.
medical channel	Sally can command her TV-video unit to scan for medical programs that pertain to ears and earaches, or she can use her screen's utility channel to talk face-to-face with a physician.
catch the whole performance	The Trenton Symphony Orchestra sells half-priced, closed-circuit video versions of its performances after the fact. Thanks to digital technology, the sound quality is, even to the expert ear, as good as "live."
finished their homework	The children turn in their homework the same way they received it: electronically.

In the text	Interpretation
her bridge club	Joyce joins a number of friends in taking advantage of a commercial video bridge service. Each player can see the other three, while her "hand" is displayed at the bottom of the screen. The person plays a card by touching it with an electronic "wand," or by naming the card aloud.
electronic mail box	Consumers can use their screens to access a full range of electronic mail services. Typically a subscriber will receive a list of incoming items that he or she may scan before investigating a given item further.
family stock account	Of the numerous automatic stock purchasing products on the market, Joyce uses a product that monitors 25 leading utilities and buys the best one at a given time. It automatically buys more shares as it receives funds to do so. She has the system set to reinvest dividends automatically, giving her notice; she could opt instead to have the dividends sent to some other account. She considers this a "rainy day" fund—an account at which she rarely even peeks.
his news menu	Jay, like many consumers, likes to digest his TV news in a certain sequence that's comfortable for him: e.g., first the headlines, then the sports, then the business section. The screen's news "menu" lets Jay select items, stop the flow of news, or delve deeper into a subject, as he wishes.
The Old Man And The Sea	Consumers can order a particular version of a movie, and then select among various additional options. Jay and Joyce have already seen the colorized Spencer Tracy version of The Old Man And The Sea; now Jay wants the more romantic of Tom Cruise's renditions.



CHRISTOPHER

[illegible]

- [illegible]
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THURSDAY April 10, 2003

Christopher sees himself wandering through a maze of rosebushes, trying to find the telephone that's ringing.

Then he realizes dimly that he's dreaming. The bedside monitor has been trying to wake him up for the past ten minutes. Groggily he shuts off the monitor alarm and forces himself to open his eyes wide.

> ***Rosebushes, rosebushes, let's see: was I supposed to order some rosebushes for somebody?***

It's not unusual for Christopher to dream about work: he runs his own business, and it lives or dies based on his effort.

Toothbrush in hand, he sits on the edge of the bed and brings his daily schedule up to the screen. The day's work turns out to be a jumble of items he has to handle or follow up on. Feeling too foggy to decipher all the items, he prints out a copy to read during breakfast.

While waiting for the coffee to brew, he calls Jarmo, who says that he's ready to drive over in the pickup truck. Christopher likes Jarmo's "can do" attitude—which is why he promoted him to foreman.

> ***Jarmo's not very strong on design. But that don't matter much: he can learn the basics on the screen.***

Christopher and Jarmo arrive at the nursery at 5:30, finding the crew already waiting to go to the job site. Christopher pulls a list of materials from the office computer; he and the crew have the supplies loaded in the trucks by 6:30.

Christopher drives the pickup to the job site, with the others following in the trucks. The screen in the pickup warns of a traffic slowdown on Route 29, and suggests a detour. Shifting lanes to take the detour, Christopher quickly phones Jarmo and tells him to alert the others to follow.

Today's work is a fairly routine landscaping job, involving the installation and calibration of a yard irrigation system. It's important to do every job well, Christopher notes—especially when it's their first job in a neighborhood.

> ***The grass'll look great—and the customer will brag to the neighbors about the water she's saving. We'll be getting business from her neighbors about a year from now.***

The customer has bought the automatic humidity-driven option. The crew make good progress with the installation and, having trenched most of the garden's perimeter before 10 o'clock, start laying the sprinkler pipe and control cable.

Just before lunch, Jarmo tells Christopher that Stavros can't show up on Monday because he has to go to his son's school. Normally Christopher would ignore such a temporary vacancy on his crew, simply asking everyone else to push a little harder. But since this job is strategically important, he decides to seek someone to fill in for Stavros.

Christopher asks to borrow the customer's videophone. Entering his code, he instantly receives a reminder that he needs to call the bank about his payroll transfers.

Then he calls the labor pool agency. They have several workers available for Monday who would fit smoothly into the crew. Among them is Willy Max, a handicapped veteran who's an expert at designing outdoor electrical systems.

> ***Ol' Willy isn't much good with the earth-handling equipment, but I can juggle the team around.***

Having taken care of the Monday labor problem, Christopher calls Maryann at the bank to check on the payroll transfers. As usual, he insists that she go out with him the next night she's free. As usual, she responds that she won't be free until at least 2015. As usual, he counters with a gallant remark: he's not surprised at her unavailability, considering how great she's looking today. She beams at him and then disappears from the screen.

Back at the job site, Jarmo and crew have

already started to regrade the trenches. It will be an early day—as often happens at this stage of a job. With Jarmo well in command, Christopher decides to head back to the office to order materials, check work schedules, and call on a few customers to say hello. On the way, he makes a change in his direction.

> ***Hey, why not just go home? I can do all the office stuff there anyway.***

With a beer in hand, he settles in front of the screen in the den. After taking care of some routine business, he wants a look at the upcoming Golden Home project, a new housing complex for senior citizens for which he is a subcontractor.

He brings the site plan to the high resolution screen. The overall project is large and cluttered; to better identify his own contractual scope, Christopher magnifies certain sections of the plan design so he can see them in crisp detail. Quickly he zeroes in on the path floodlighting system.

> ***They didn't tell me the path goes right through that little grove of willow trees. This'll take some extra supplies—and some redesign, I bet.***

The redesign work entails some urgency, since he has to order supplies well in advance of construction. Christopher figures this is a perfect time to give Jarmo some more experience at design work, his chief weakness in the landscaping business. He decides to give Jarmo a call that evening in order to talk over the project.

> ***With all the fancy computer stuff on my system, the design should be a snap for him. 'Course, he can always call me to walk him through it. Me, I'm watching a movie.***

In the text	Interpretation
The bedside monitor	Like many other consumers, Christopher has a bedside monitor: a small version of the standard TV-video unit that performs various special functions, such as alarm clock and preparing the morning coffee.
he prints out a copy	Christopher can print out the information that appears on the screen, using a small silent printer attached to the bedside monitor.
learn the basics	Christopher figures Jarmo can learn a lot about landscaping design by means of training aids that are available over his household TV-video screen.
traffic slowdown on Route 29	The screen in the pickup truck monitors the state highway system, broadcasting data about congestion in the major arteries. A pictorial display on the lower part of the windshield shows where the tie-ups are. The other trucks in the caravan aren't equipped with screens, but they do have cellular radio telephones; Christopher informs Jarmo of the detour, and Jarmo tells the others.
humidity-driven option	Originally developed for maximum yields in truck farming, these devices can activate lawn sprinkers based on lawns' need for water. They are popular with homeowners because they conserve costly water and produce healthy, verdant lawns.
borrow customer's videophone	On entering his own ID into any videophone, Christopher is effectively making it "his own phone" temporarily, for practical purposes. He may automatically access all the information and services he would be getting on his own phone system at home. For instance, his own computerized reminders appear on the screen; he can access his own private filing system. Any calls he makes on the borrowed phone will be charged to his account automatically; as appropriate, he'll pass these costs back to the customer.
labor pool agency	This commercial service, with which Christopher has an account, maintains a profile of his business so that it can start identifying worker candidates as soon as it recognizes Christopher's ID number over the telephone line.
call Maryann at the bank	Christopher could perform this entire transaction alone—and faster—if he chose. He enjoys bantering with Maryann, however.
order materials, review	Christopher can use his home TV-video unit for numerous business functions, including ordering materials, organizing his schedule, and making videophone calls to clients.
magnifies certain sections	The computerized rendition of the landscaping plan allows the viewer to "zoom in" on any section for a more detailed look. If he wishes, Christopher can turn the picture around and view the landscape from the opposite direction. The use of high definition (or high resolution) screens is commonplace among many small contractors, architects, medical practitioners, and others whose work involves a strong visual component. Its most common use, however, is for home entertainment.
fancy computer stuff	Computer-aided design (CAD) has flourished for years, but predominantly among large business and institutional users. Now it has become common for the computer-literate entrepreneur as well. CAD makes it easy to do design work on a computer screen, using a "wand," a "mouse," or other such devices to tell the computer how to arrange design elements in the picture. The computer does much of the design work automatically. Jarmo can access this "fancy computer stuff" via the link between his TV-video unit and Christopher's. If he needs help, he can call Christopher while the information is still on the screen, and both he and Christopher can look at the same material simultaneously while they discuss it. Christopher can interrupt his movie to take the call on his screen, and then resume watching the show where he left off.

SARAH

Elderly homemaker

- Age 77
- Widowed; lives with divorced son, [illegible] in suburb of Wheeling, West Virginia
- Has serious heart condition that requires ongoing monitoring; is dependent on others for transportation
- Derives sole income from Social Security; is supported partially by her son, who earns a [illegible] income from his sales position

WEDNESDAY January 18 2006

Awakening, as usual, without need of an alarm, she enjoys the strains of light chamber music as she waits for the sun to rise. She anticipates the next piece, one of her favorite Bach quartets, and hums along with it when it begins. She also starts the coffee for Garth, who, judging by the absence of light in the hallway, has not yet awakened.

> ***Poor boy! I hope he's not keeping too late hours again.***

Wishing she could go wake him with a hug, but feeling the early-morning stiffness in her legs, she turns to the gentle substitute of sharing her Bach quartet with him.

Soon Garth is up and hurrying to get out of the house. He has to be on his way to the city before the traffic gets snarled. Nonetheless Sarah, who is watching The Today Show when he comes down to the kitchen, immediately switches to his headline digest in deference to his routine. He kisses her forehead, gulps his coffee as his eyes glance up and down the screen, and heads out the door.

> ***Oh, Garth! I hope you'll learn to slow down before you hurt yourself. Think of all the heart problems you're inheriting.***

Bemused by his hurried pace, Sarah cleans up the dishes and waters the violets before returning to The Today Show with her cup of peppermint tea.

She is mixing the dough for today's pastry class when the chime reminds her to prepare for her morning check-up. She washes her hands and puts the medical bracelet on her wrist. Turning on the screen, she chooses a gardening program to watch for the few minutes until Frieda, the nurse at the clinic, will call.

Frieda's call arrives five minutes late today. She smiles brightly at Sarah, though she seems a bit harried. "They've given you too many patients, my dear!" exclaims Sarah. "No, it's just that Mrs. Randall had a few complaints this morning that she wanted me to look into," says Frieda. Sarah notes that Mrs. Randall has a few complaints every morning.

Sarah plugs in her bracelet without being prompted. "Good," says the nurse as she monitors Sarah's pulse. "Your vital signs are normal, Sarah." Friday is the day for Sarah's weekly post-operative consultation with a staff doctor. "Okay, I'm going to get Dr. Morris on the line," Frieda says. "He's a young, enthusiastic sort," she adds with a smile. "I think you'll like him."

Moments later Sarah is viewing Frieda on the left side of her screen and Dr. Morris on the right. "How are you feeling today, Sarah?" the doctor asks breezily, as he glances at her pulse numbers. "Any pains? Extra tired?" No, she replies, everything seems fine.

"Let's call up your latest MRI picture here for a quick peek," he says. "Just lovely—appears you're progressing very nicely," Dr. Morris says. "Your cardiac catheter pictures look great, by the way; would you like to see?"

Sarah catches the wink from Frieda. "No, thanks," she politely declines.

The doctor orders the nurse to set up a routine visit of the med-mobile to Sarah's place next week for some more chest pictures. Then he leaves the screen. Frieda books the med-mobile's visit for Sarah, who makes a reminder for herself. "I think that takes care of our business for today!" says Frieda.

Sarah, hopeful of a little chat, ventures into the subject of Frieda's daughter in college. "Oh, I'm sorry, Sarah, it's Mrs. Randall again," Frieda says. "That's all right, dear," smiles Sarah, who asks that the nurse transfer her to her social worker, Madelyn.

Sarah finds Madelyn in a more chipper mood than Frieda, and begins by complimenting her on her hair. They discuss hairstyles and hairdressers for a few minutes; Madelyn urges Sarah to start going to Pierre's again when the weather gets warmer.

Sarah tells Madelyn that she hopes to attend the senior outing next Wednesday, but Garth can't get away from work to take her this time. Madelyn checks her ride board and confirms the round-trip for Sarah on the spot. "Is there anything else I can do for you today?" she asks.

Actually, yes, says Sarah: she wonders if the Social Security people have straightened out her status since her last heart attack. Madelyn notes that she gave the Social Security Administration a detailed account of why Sarah should be considered disabled and therefore entitled to SSI benefits as well; did Sarah's last check reflect an increase?

Sarah, not sure, gives her bank account number to Madelyn, who promptly summons a bank clerk to the screen. He compliments Sarah on her quick recovery and then verifies that the last deposit was the amount Madelyn thought it should be. Sarah, not wanting to take more of the time of either person, thanks them both and rings off.

> *I'm so glad to get those extra few dollars. Perish forbid that poor Garth should have to spend all his vacation money on me again.*

Her morning's business concluded, Sarah feels ready to turn to her favorite hobby: baking. She tunes in the pastry class and follows along, enjoying the chatter of the program host. Having completed the first stage of the day's recipe, she puts the Danish twists into the oven and starts making the filling for the pastry.

> *Now, let's see: anise. Ground anise. Where did I put that?*

She stops the class to look for the ingredient, but without success. After some thought, she decides to complete the recipe without the one spice. If Garth likes the recipe, she'll make it again—next time with anise, she hopes. She puts a copy of today's baking class in Garth's videostorage so she can refer to it later. Then she wonders whether she should ask Garth to pick up some anise for her on the way home.

> *He always says he doesn't mind, and he does love the pastry. But I do hate to bother him.*

Finally she calls Garth; he's out of the office. She leaves a message asking that he pick up some ground anise; she thinks he can get it at the drugstore where he has to pick up her prescription anyway.

Mainly to ease her sense of guilt about being a burden on him, Garth had proposed that she use the drugstore's delivery service for her prescriptions, but she was too uncomfortable with the prospect of opening the door to strangers.

> *Maybe I'll give it a try, though. The grocery shopping service works just fine. And they always use the same delivery person: that's what I like.*

Sarah has soup for lunch, and then watches Video Book Club for a while. In mid-afternoon, by rote, she calls her best friend, Betty, for a chat. Betty's image appears on the screen to remind Sarah that she will be gone the next two weeks, visiting her son whose wife had just had a baby. Sarah's heart sinks; she had forgotten about her friend's impending absence.

> *I must have made myself forget on purpose. Or am I just losing it altogether?*

Sarah leaves a non-urgent message for Betty: "In case you're watching this, I just want you to know I'm fine and I miss you."

Feeling a mild sense of gloom, she ponders what to do with herself. After a few minutes' hesitation, she returns to the screen once more.

> *Maybe I'll try PhonePals at our senior club, like Betty suggested. She said she likes it a lot.*

Sarah calls PhonePals, which automatically displays its daily calendar of conversation topics and phone numbers on her screen. To her pleasant surprise, there's a "phone-chat" in progress on baking and cookery. Soon she is discussing recipes with Janet from Steubenville, Louise from Morgantown, and June from

the other side of Wheeling.

She describes her morning baking exercise and her frustration about the anise. Louise asks her if she thought of substituting anisette as a flavoring agent. Snapping her fingers, Sarah recalls seeing a bottle of anisette liqueur in Garth's liquor cabinet. Sure enough, she discovers later, it's there.

The other women are regular PhonePal callers, though none have spoken to the others before. The conversation flows readily, and all seem to enjoy it. After a while, Sarah rings off, feeling excited about her discovery and looking forward to calling again on the morrow.

Quickly she calls Garth, tells him about her conversation, and lets him know that he needn't pick up the ground anise after all.

After supper, Garth tries the Danish twists and proclaims them delicious exactly as they are.

"Don't stay out too late—it's a weeknight," she admonishes him as he heads out to see his current flame, Elaine, across town. He makes her promise not to worry, and enters the numbers of his car phone and Elaine's apartment into his mother's emergency pager.

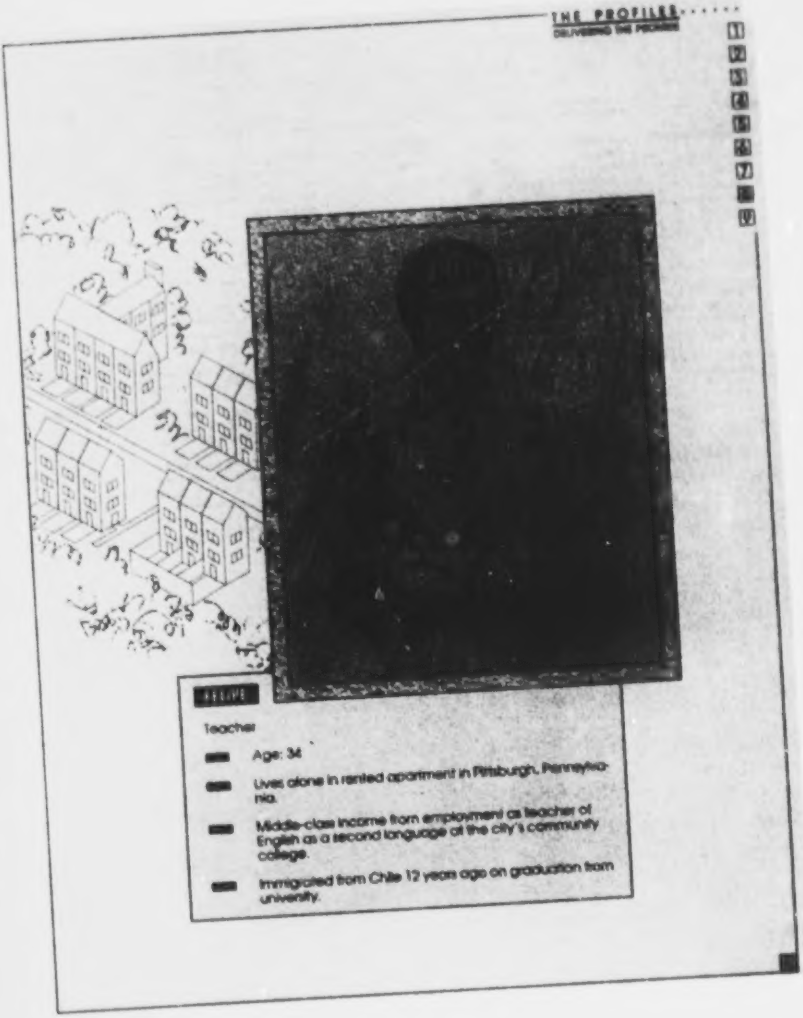
On his departure, Sarah curls up in bed with The Sound of Music, during which she slips comfortably into sleep for the night.

In the text	Interpretation
enjoys the strains anticipates the next piece	Sarah has programmed her bedside screen to play certain pieces of music in sequence, starting an hour before dawn. Though she needs no alarm clock, she enjoys waking up to her favorite melodies.
starts the coffee	Sarah activates the kitchen coffee maker automatically from her bed. In fragile health, she has come to rely increasingly on such automated devices to help her perform her household duties.
sharing her Bach quartet	With the flip of a switch, she can send the music or other programming from her screen to the screen in Garth's bedroom.
his headline digest returning to the Today Show	Sarah's son begins each morning by viewing a mixture of news and sports headlines, customized to his taste (national, then local news, basketball preceding other sports; items limited to two paragraphs). Sarah can interrupt the viewing of her own show and then resume watching it at her convenience without missing any part.
heart problems	Sarah has a history of heart trouble, and is currently recovering from bypass heart surgery.
chime reminds her	Sarah uses an automatic reminder system that plays a certain tone (a chime, a trumpet, etc.) at the appropriate time to remind her of some important item. Many such systems are voice-activated: the consumer tells the screen the type of tone she wants to hear, and the time or times at which she wants to hear it. The consumer also can opt to have the screen "speak" to her in her own voice to deliver reminders.
medical bracelet	Since her heart surgery, Sarah has undergone daily checkups, which, thanks to her medical bracelet, do not require that she go to a hospital or clinic. By means of telemetry, this device conveys basic medical information about the wearer (pulse rate, blood pressure, etc.) to a doctor or nurse at a remote location.
chooses a gardening program	Before undergoing each morning checkup via her medical bracelet, the patient is advised to relax for several minutes in order to assure that the body is relaxed and that all vital signs are at their most stable. Sarah spends these several minutes by watching a tranquil program of some sort. The fact that she can easily find a program on gardening reflects the fact that there are programs readily available on a vast array of subjects.
She smiles brightly	Sarah and Frieda always talk by videophone rather than by the voice-phone of yesteryear. Sarah typifies the trend of consumers to start using the videophone for special calls only, and then begin using it for all calls as they grow comfortable with the new technology.
Mrs. Randall had complaints	Mrs. Randall, another elderly patient of Frieda's, routinely complains of symptoms that send Frieda to her screen's medical data base for investigation. Frieda keeps her patients' medical records on screen (i.e., for her own private viewing) so she can identify an ongoing problem a symptom might indicate.
your latest MRI picture	The doctor can gain instant access to a computerized archive of Sarah's entire medical history, including all visual records such as x-rays, CAT scans, and magnetic resonance imaging (MRI). Becoming common in the 1980s, MRI is a radiation-free imaging technique that forms a computerized picture by generating a magnetic pattern in the water molecules of soft tissue. Digital composition and storage of medical images has brought great benefits to both doctors and patients. One clinic can take an x-ray or other picture, store it indefinitely in the computer, and transmit a perfect "original" of the picture to any other doctor or hospital immediately on request. The high quality of picture and ease of transmission encourages the rise of

In the text	Interpretation
	specialized medical imaging clinics that all doctors can use in common—thus freeing each individual doctor from maintaining costly imaging equipment, and sparing the patient considerable expense, inconvenience (and, in case of x-rays, potential health risk of repeated radiation exposures), etc. Digital image processing and storage lets doctors—such as Dr. Morris in this case—automatically compare two or more images (e.g., MRI pictures) to see how a patient is progressing over time. Sophisticated computer programs identify and analyze any changes in pictures that might indicate new problems, post-surgical complications, etc. Doctors also like the fact that these visual records take practically no space to store—and don't deteriorate over time or get lost in the mail.
cardiac catheter pictures	Dr. Morris refers here to internal "movies" of Sarah's heart in action, that let him see in high-definition, three-dimensional detail the pumping of her heart, the opening and closing of heart valves, etc. As with still images, cardiac catheter and other "action" images such as sonograms can be stored digitally on laser disks, accessed instantly, freeze-framed for detailed computer analysis, etc. Dr. Morris's enthusiasm for such high-quality imagery fails to take into account many patients' squeamishness.
med-mobile	The med-mobile is a vehicle equipped with various kinds of diagnostic equipment, such as an MRI scanner, whose data it transmits directly to a receiving hospital over cellular radio. The combination of screen consultations and med-mobile lets patients take care of many relatively complex examinations and procedures without leaving home.

In the text	Interpretation
makes a reminder	Sarah can use her screen's reminder function while she is using the videophone. In this case she leaves herself a voice message, "Med-mobile at noon," which a chime will remind her to play back on the morning of the appointed day.
Mrs. Randall again	Frieda has received an urgent "interrupt" message on her screen from Mrs. Randall, who has a new symptom to report.
ride board	Madelyn uses her screen to maintain a schedule of available drivers, and the drive dates and locations to which they are committed. She updates this schedule automatically as people call to ask for rides. The drivers leave voice messages to "tell" the system when they will be able to provide transportation.
summons a bank clerk	Madelyn, Sarah, and the bank clerk can engage together in a videophone call, each person seeing the other two on the screen. The fact that the clerk can see his customer "face to face" permits him to disclose her checking account balance to her "over the phone."
tunes in the pastry class Garth's videostorage	This program is available for viewing any time after 10 a.m., so Sarah can begin watching it when convenient. She also can "rewind" it, store it, and play it back as she wishes. If she does decide to keep a copy, she will put it in her son's video "library": a storage service to which he subscribes that lets him keep an unlimited volume of video recordings on file.
grocery shopping service	Sarah buys groceries by calling the supermarket, going up and down the electronic product lists that equate to "aisles," and looking at pictures of the products on the shelf from which to choose. With the touch of her finger to the screen, she puts products in her electronic "shopping cart" and moves on. When finished, she commands the system to have her order delivered and her checking account debited directly.

In the text	Interpretation
Video Book Club	Her eyesight dimming, Sarah derives much of her reading pleasure from a program that reads books aloud.
Betty's image	Betty's TV-video unit recognizes that it is Sarah calling, based on her phone number. Automatically it plays a video message that Betty had recorded for Sarah in the expectation that her friend would call.
"In case you're watching this"	Sarah may leave an audio-video message, or a voice message only, for her friend. She chooses audio-visual.
PhonePals	One of various social interaction services available through her seniors club, PhonePals lets a club member participate in a face-to-face conversation, via home screen, with others on a variety of topics. A person can join a conversation by dialing the direct number—or simply by touching the appropriate calendar item displayed on her screen. Callers are billed automatically when they use the service.
emergency pager	Sarah keeps by her bedside an emergency paging device that will, with the touch of a button, turn on her screen automatically and summon help. This device is programmable as the consumer's needs or contacts change. In this case, Garth tells the device to ring him first at his car phone; and, if no answer there, to ring him at Elaine's apartment. If neither number answers promptly, the device will ring the police emergency number automatically.
The Sound of Music	Consumers can get a private viewing of virtually any commercial film ever made, whenever they want. Among the least expensive films to obtain are the old "classics" that Sarah favors. Before getting ready to fall asleep in front of a favorite old movie, she can command the screen to shut off automatically at the film's conclusion and begin playing her classical music favorites the next morning.


THE PROFILES
DELIVERING THE PROFILES
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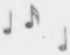
FELIPE

Teacher

- Age: 34
- Lives alone in rented apartment in Pittsburgh, Pennsylvania.
- Middle-class income from employment as teacher of English as a second language at the city's community college.
- Immigrated from Chile 12 years ago on graduation from university.



FRIDAY September 22 2000

Friday. "*Gracias a Dios!*" Felipe mutters aloud as he glances over at his wake-up screen. The machine greets him with its familiar smiling face, to the accompaniment of soft comforting Spanish guitar. The lights rise slowly, illuminating the way to the bathroom. By the time he has splashed water on his face and brushed his teeth, the smiling face has been replaced by his calendar, which he scans cursorily.

The calendar shows that a fairly typical day awaits him: morning and afternoon classes, office hours, homework to grade. Tonight is his turn to do the remote class. Then, he notes, he is booked to use the art department's dark room for two hours.

> ***That would have come up tonight. I haven't had time to shoot a roll of film in weeks. Might as well skip it: I'll go out with Joan instead.***

He touches the "reschedule" square and then goes into the living room. There, he switches on the big screen and queues his favorite aerobics show, *Cuerpos Hermosos* ("Bodies Beautiful"). After exercising, he hurries through the rest of his morning routine and heads for the door.

> ***Better make it snappy, hombre, they're really cracking down on instructors arriving late. But what am I forgetting?***

Enroute to the campus, he remembers: call Joan. Wasn't there something else, too? Oh, yes: the washing machine. He decides to take care of the washer business first, to get it out of the way. At a red light, he calls the repair service, confirms that a technician will come out that morning, and gives the service an access code for getting into his apartment.

Having taken care of the washing machine, he calls Joan, getting her voice message service, which indicates that she will be back in a few minutes. Leaving his message in French, he invites her to an evening of dinner and dancing. Then, as he pulls into the parking lot, he recalls another item: call Rodolpho.

> ***That's it. I've got to start using that reminder service on my screen.***

Rodolpho, attending Carnegie-Mellon as an exchange student in pre-med, has dreams of attaining U.S. citizenship and practicing medicine in America. For now, however, he is going through the throes of adjusting to a foreign culture in which he constantly must battle two major problems: homesickness and the language barrier.

Felipe realizes that it falls to him, as Rodolpho's only relative in the area, to help on both counts. Grabbing a cup of coffee, Felipe goes to his tiny office, turns on his screen, and tries to reach Rodolpho in the few minutes before class begins.

He catches Rodolpho looking haggard and disoriented, his glasses halfway down his nose, a book on his lap. By all appearances, Rodolpho fell asleep studying and has spent the night in his living room chair. They converse rapidly in Spanish, Rodolpho always heartened at the sight of his cousin. The young man tells Felipe not to worry, he has plenty of money thanks to a check he just got from Mama. Felipe tells him to call, any time, if he has any problems or needs advice.

Then Felipe runs to his first class: a mixture of students who speak perfect Spanish, German, or Japanese—but practically no English. He drills them on verb conjugations for two hours, reminding each student to speak clearly so the auditing students can hear.

After class, a student approaches Felipe to express his enthusiasm for a language lecture he viewed on his screen last night. The student recorded the lecture, and is willing to share it with the class. Felipe thanks him and takes down the access number, which he shares with his students in a memo he sends out over the screen on returning to his office.

No sooner has he sent the memo than an urgent electronic mail message arrives at his screen. The dean wants to know if any instructor can fill in, on short notice, as a guest speaker at a special assembly at King Junior High. The event, a forum on college curriculum of the future, examines how junior high

students can act to better their college opportunities.

Felipe knows the dean would like to send a speaker, both as a public relations gesture and as a way to express the school's commitment to lower-income students.

Maybe I should offer. I'm a lousy public speaker, though.

Then he remembers seeing something in the papers about a Princeton professor who was making waves in the field of educational theory. Felipe calls up his news screen, orders a search, and quickly finds the story. It's Princeton's Dr. Gates, who just won a national award for his new book and is now on the lecture circuit. Could he possibly be enticed to address the students at King?

Seems crazy, but it can't hurt to ask.

Felipe sends the story and a cover memo back to the dean, and turns to his lunch. He's eating a sandwich at his desk when the phone rings. It's Rodolpho; he sounds upset. The young man is calling from the department of motor vehicles, where he is attempting to obtain his driver's license. He doesn't understand what they're telling him, and the forms throw him completely. Felipe calms his cousin, then switches the call to his screen.

Together they look at the forms, and Felipe walks Rodolpho through the process of filling them out. Felipe then puts his cousin on hold and calls the motor vehicle administration: do they have a Spanish-language assistance line? It turns out they do; in fact, Rodolpho can complete most of the application process over a screen, talking with a bilingual administrator. Felipe returns to Rodolpho and gives him the number to call.

They continue to chat for several more minutes. Rodolpho vents his frustration about his language difficulties. Felipe offers to tutor him as much as he wants; he also reminds Rodolpho that there are Spanish-language programs and services of all kinds available over the screen, including a translation service.

During Felipe's afternoon class, the students present little skits they have devised. The skits are surprisingly good, considering they're coming from mostly second-year students. Felipe compliments several students on their authentic-sounding American accents.

These kids are picking up English faster than I did when I came to the states 12 years ago. Wish I'd had some of the breaks they've got now.

Back in his office, he finds that he has just missed the call of the washing machine repair technician. He returns the call and learns, to his chagrin, that the repair will cost $150. He tells the technician to wait and quickly consults the electronic flea market.

No used washers available for less than $200, and I'd have to move the thing myself. Who needs the hassle? Might as well just repair the old clunker I've got.

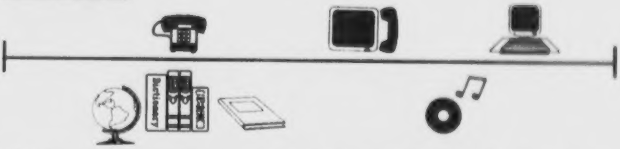
Then he finds that he doesn't have the $150.

Hey, wait a second: what's family for, after all?

He calls Rodolpho and catches him as he was about to head out to the library. Can Rodolpho lend him a small sum until payday? Sure enough, Felipe's cousin agrees, and transfers the funds. "Gracias, amigo," Felipe says, promising to pay back the money on Tuesday. "No problem," Rodolpho replies. "Hey—you're picking up the English!" beams Felipe, who calls his apartment again and orders the repair technician to fix his washer.

I'll invite Rodolpho to come around Sunday and bring his laundry.

On concluding this call, Felipe notes that there's an electronic message waiting for him. It's the dean. "We got Dr. Gates for the lung assembly!" the message reads. "He's going to



talk to them on the auditorium screen for ten minutes, then take questions. Getting Gates is a real coup for us, Felipe. Good thinking."

Flushed with success, Felipe sends back an acknowledging message: "Do I get to be full professor now?" In moments the reply comes back: "Not till you can pull as many strings as I can."

It's nearly five o'clock; still no word from Joan. He calls his home screen to see if there's a message. There is: she's sorry about being slow in getting back to him, but she had thought she might have to work late. She'd love to have dinner. He calls back, again getting her voice messaging service. Leaving his message in Italian, he tells her that his dancing shoes are ready and waiting.

Then Felipe turns his thoughts to the remote class, starting at 6 p.m. Tapping into his screen to find out what the class should be covering in this lesson, he decides that he'll conduct the class from home.

The remote class begins on time, and most of the students seem to have done their homework. One student "arrives" 20 minutes late; Felipe tell him to review the first part of the class afterwards. Otherwise the class is uneventful, and Felipe adjourns it at 7 o'clock.

Now, at last, the weekend begins. Tossing his tie on the sofa, he orders a "listen" of the new salsa record from Brazil that his friends have been talking about.

The screen indicates a call is coming in. It's Joan. She tells him, in unhappily plain English, that she does have to work late after all; may she have a raincheck? "*Mais, oui!*" he replies, exhibiting more grace than he feels. She blows him a kiss and disappears from the screen.

Dejected, he finds solace by scanning his photo file, which he has been meaning to organize. He comes across a family photo he had taken on his last visit to Chile over five years ago. In the crowd of faces he spots Rodolpho, before he had given up crew cuts and grown a mustache.

> ***Boy, has that kid changed! I'll bet he'd get a kick out of this picture.***

No sooner has Felipe sent the image to Rodolpho, with a cover message, than an electronic mail message comes in from Claudette, another instructor at the college. She has two tickets to a performance of flamenco dancers at the campus auditorium. Would he like to go? "*Si, si, senorita,*" he quickly responds, grabbing his jacket.

In the text	Interpretation
wake-up screen	Felipe uses his TV-video unit for a customized wake-up service. At the appointed hour the screen illumines, displaying a cheerful graphic; pre-programmed music plays; and the screen-controlled light dimmer switch turns up.
face has been replaced	Felipe's wake-up program includes a timer mechanism that changes the screen after a designated amount of time elapses.
turn to do remote class	This class, available on screen, is offered specifically for people who are shut-in, who live far away, who are sick, who work daytime jobs and can't attend regular classes, etc. Felipe and other instructors rotate the responsibility of conducting this class, which they can teach from home if they prefer.
booked to use dark room touches the "reschedule" square	A skilled amateur photographer, Felipe gets access to the college's dark room facilities by joining an electronic queue that schedules him automatically when there is an opening and transmits the message directly to his screen. On this occasion, however, he decides to pass up his opportunity to use the dark room and will automatically rejoin the queue to await another time. He executes this change in his calendar—i.e., his daily schedule—by touching the screen.
favorite aerobics show	The screen makes available an extremely wide range of program choices. Felipe prefers an aerobics class that is conducted in Spanish.
calls the repair service	Car phones have become very inexpensive. Felipe uses the one that came with his second-hand car.
access code	Felipe's apartment building and apartment entrance are controlled by numerical locks, the combination of which the residents can change temporarily as needed. The repair technician will open the doors using codes that are usable one time only; then the locks will revert back automatically to their secret combinations. Residents can change the numeric "passkeys" remotely by screen or telephone.
voice message service	These automated services are easily reprogrammable from any phone or screen; a person can change her announcement message quickly as the need arises.
Rodolpho looking haggard	Felipe and Rodolpho converse by video phone, which gives each the sense of being able to visit with the other.
auditing students	As a matter of routine, the college makes classes available to the public over the screen on a passive audit-only basis. Felipe is ever mindful that a camera is watching him in his classroom.
share it with the class	The student viewed the lecture from his room over his screen and made a video copy. Other students can get access to this video, and copy it for their own use, by calling his number and entering a temporary pass code in their TV-video unit's phone key pad.
memo he sends out	Felipe's memo to his students is an electronic mail message that he can distribute automatically, since his screen keeps a file of the students' electronic "addresses" (i.e., their screen telephone numbers). Felipe has written his brief memo in English; on request by the receiving student, the electronic mailing function will automatically perform a basic translation of the message into Spanish, German, or Japanese.
urgent electronic mail message	The electronic mail system's features include a signal that flashes when a person is receiving an urgent message.
orders a search	By accessing a news data base service and typing in a few key words, Felipe can quickly find any recent stories on a given subject. Most of the stories that appear in major daily newspapers are accessible in this fashion.

In the text	Interpretation
Felipe sends the story	Felipe can transmit any data on his screen (and accompanying message, if he wishes) to anyone else on his electronic mail system.
switches the call to his screen	Telephones are still common, but this episode illustrates why screens are fast catching up to them in popularity: they are capable of communicating so much more.
Spanish-language programs and services	The screen aids foreign language speakers, first of all, by supporting a great number of foreign language programs and services. Secondly, the screen overcomes the language barrier in many cases simply by communicating through pictures (and letting consumers make choices via touch screens, joy sticks, etc.). Third, the screen is a two-way medium that helps a foreign language speaker reach and converse with a bilingual person when needing assistance.
authentic-sounding American accents	This generation of students has had the benefit of the screen as an important aid in learning English. Students may use the screen, for example, to tap into English conversation classes. The growing prominence of screens and other devices that respond to voice commands (i.e., in English) gives these students an added incentive to master the American accent.
electronic flea market	The screen offers extensive opportunities for electronic shopping, both conventional (e.g., department stores) and unconventional (e.g., electronic "bulletin boards," classified ads, flea markets, etc.). Felipe is able to find out in moments whether it is economical to repair his old washing machine.
doesn't have the $150 transfers the funds	Felipe uses the screen to make an instant inquiry about the status of his checking account. On agreeing to lend him money, Rodolpho can complete the transaction at once through a simple electronic command. The confirmed deposit immediately gives Rodolpho the option of withdrawing cash from an automatic teller machine, should he so desire. In other words, the screen makes it possible, in effect, to send cash to someone almost instantly.
there's an electronic message	A small signal in the corner of Felipe's screen lets him know when a new electronic mail message—in this case, not an emergency—has come in.
the auditorium screen	The King Junior High School auditorium is equipped with a giant screen by means of which Dr. Gates can remotely address the students—and answer their questions as well.
what the class should be covering	Via the screen, Felipe can view the course syllabus, plus notes left behind by the other instructors as they take turns conducting the class.
review the first part of the class	The class, taped in its entirety, is available for review by students via their screens.
the new salsa record	Felipe orders the playing of the record by means of a radio-based "pay-per-listen" service. This modern form of "jukebox" gives the listener a virtually limitless library of music from which to choose — and a transmission of flawless quality. A dollar, charged to the caller automatically, is the standard fee for ordering a given piece of music.
image to Rodolpho	Part of the paraphernalia he has accumulated in pursuit of his photography interest, Rodolpho has a compact facsimile machine, attached to his TV-video unit, that lets him transmit still pictures in very high detail and quality.

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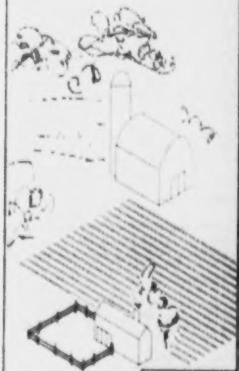
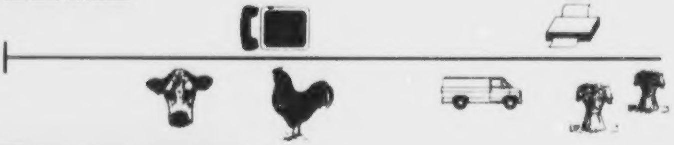


KAREN

Farmer

- Age: 40
- She, husband Mike, 45, and son, Jeff, 13, live and work on a small farm outside of Richmond, Virginia. Her other son, Wilson, 19, is in the Air Force
- Husband Mike is a paraplegic as a result of an auto accident he suffered in 2004
- They derive middle-class income from the farm, plus a Social Security stipend Mike receives



SATURDAY, September 26, 2009

Saturday is just another work day for Karen, who has milked the cows, fed the chickens, and collected the eggs before the sun rises. The work is hard, but she loves the farm and she can't imagine doing anything else.

Neither can Mike. Life is better for them now, five years after the accident that paralyzed his legs and nearly dashed their hopes. If it weren't for some kind friends, a few lucky breaks, and a steadily less expensive stream of support services, they would have had to sell the place.

> ***That'd kill Mike for sure. He's loved this land ever since his daddy brought him to it forty years ago.***

This has been a good year for them. Their main cash crop, strawberries, did very well, and they got an excellent price from the specialty processing outfits that have become their main customers. The tomatoes, green peppers, and onions also are doing well, and they're ripening for harvest at a comfortable pace. Karen and Jeff run the produce stand every week at the farmer's market in downtown Richmond, while Mike drives off to his physical therapy appointment at the general clinic.

But the trips to the farmer's market are becoming a little less frequent. Mike has become adept at finding spot buyers who are willing to buy in bulk, at a price above wholesale; as a result, some days there's nothing left to sell at the stand.

Over breakfast, Karen and Mike discuss the particulars of the day's work. Of necessity, Karen and Jeff must divide up most of the physical labor, using machinery and seasonal hired hands for support. Mike frets about how Karen will manage when Jeff leaves home. Karen points out that he had the same worries before Wilson joined the Air Force, but so far, everything has turned out all right. They'll make it somehow, she says.

She puts Jeff in charge of digging the new fence posts, while she inspects the corn and the string beans. Then she goes to the barn, flicking a snail off a tomato vine as she passes.

The barn is her "office"; in fact, it actually has a small desk in a corner that supports a TV-video unit. From her screen, she can control a number of different labor-saving support systems around the farm that she and Mike prudently purchased with the insurance money from his accident.

> ***Everything's looking good so far, today.***

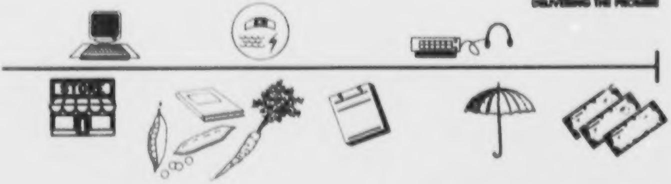
The milk volume is normal, fat content just a touch on the high side. In the north field, the temperature and humidity gauges look fine. No activity on the gopher chart. Planning her next trip to the farmer's market, she makes a quick check of the retail price for peppers.

> ***Back up to ninety-nine cents at the supermarket! I'll try to get an extra bushel of them picked this time.***

There's been rumor of a cold snap coming; she checks the status of the anti-frost fans and smoke pumps. All systems are hooked up and ready to go, the message on the screen tells her. She recalls the days when the farmers lived in helpless dread of the frost—like the one that wiped out her parents' farm around the time she was born. Now small farmers at least can hold their own.

Cassie the heifer has been doing rather poorly the last day or so; time to call Doc O'Keefe down at the vet hospital. Karen chats with the veterinarian for a few minutes before giving him a look at Cassie. He says it just looks like she needs a vitamin booster, which he offers to administer over the next day or two. She thanks him and returns Cassie to her stall, tossing in a little extra fodder for her.

Karen knows she needs to put in a solid day of pruning and harvesting, so she attends quickly to the rest of her desk routine. The final task, but one she does faithfully, is to take a peek at the very special little garden they have planted in a corner of the north field, surrounded by a temporary picket fence. The only plant here, which they're growing as an



experiment, is the *auricacia*: an exotic species of Brazilian orchid, recently discovered, that has become a prized spice plant.

> ***I can't wait to see what we harvest. Mike is sure we've stumbled onto something that's gonna be bigger than truffles.***

The monitors indicate that the auricacia plants are stable, except a touch on the dry side. Karen turns up the water drop a nudge. She then double-checks to make sure the garden's alarm is activated: her main worry is that the cows will break into the patch and graze it down to bedrock.

As if on cue, Karen gets an emergency message. It's Jeff, calling from his walkie-talkie: several cows have wandered off, and he thinks Moonbeam is heading for the north field.

> ***I'll bet Moonbeam is leading the herd. That silly cow is going to get herself made into a hamburger one of these days.***

Karen switches quickly to the tracer screen to see if it can pick up any of the wandering animals. At once the screen displays a small cloud of dots that would indicate the main herd at pasture. Quickly she spots two other dots, not far from the creek, where Jeff has been installing that new fence. Then she finds the dot that probably represents Moonbeam; it's closing in on the auricacia garden.

> ***I hope she's going for that thick patch of clover around the edges.***

She shuts off the garden's alarm so it won't bother Mike, and swings onto the back of Colleen, her mare. Riding across the field, she waves to Jeff, who already has the other two stragglers in tow, and then gallops toward the auricacia. There she finds Moonbeam contentedly munching the clover, and leads the cow back to the herd.

> ***Those little electronic cow tags may not be as personal as a dog, but they do get the job done, don't they.***

Despite his handicap, Mike is very heavily involved in running the farm. He performs a large and growing number of information-management duties, which he and Karen both have come to appreciate greatly.

A farm, his father taught him, is like a pig: you can use every part but the squeal. He has always tried to find ways to make every part of the farm productive, from the tree stumps to the dandelions. The TV-video screen has helped him carry this idea even further.

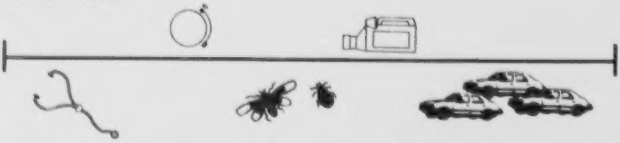
He uses the screen to keep track of the farm's use of water, feed, fertilizer, pesticides, machinery, and other resources; watching agricultural programs has built his expertise in each of these areas. He tracks regional and global weather patterns that may affect their crops weeks or months down the line. He even subscribes to a new Department of Agriculture service that uses satellite imaging to detect fertilizer and moisture deficiencies in the soil, transmitting data to subscribers' screens in real time.

And he spends considerable time in the electronic marketplace, shopping for an item of used equipment, offering to swap chickens or jarred honey and jams for a new saddle, or seeking loans from the local cooperative until payday.

Mike has become the family's social secretary, using the screen to stay in touch with friends and neighbors, exchange gossip, and stay informed about events at the church and 4-H Club.

The screen also proves invaluable to him in coping with his handicap. Each morning and afternoon he watches an exercise show for paraplegics. The screen enables him to consult easily with his doctor and the clinic's physical therapist. And he has been using the screen to work toward a degree in accounting—a profession he hopes to practice in the evenings without leaving home.

Karen and Jeff are pulling onions when Mike signals her on her beeper. She and Jeff



trot to the house and call out to Mike. "It's Wilson on the screen," he shouts back. She and Jeff join Mike in the study. Wilson tells them he's being reassigned to West Germany. The news, and the sight of Wilson in his crisp new uniform, make Karen start to cry from missing him. He pleads with her not to cry, and promises he'll call them at least once a week from Germany.

The call concluded, Mike suggests Karen stick around: he's learned that their Congressman is holding local office hours, and they can try and see him. "We're already in the queue," he says. Shortly their turn comes: Mike has prepared a short laundry list of items to discuss with their House member, pertaining to federal agricultural policies. Karen simply asks the Congressman if he can make sure Wilson gets to fly home for Christmas.

In the text	Interpretation
Steadily less expensive stream of support services	As the profile goes on to relate, Karen and Mike use their screen to access a wide range of services: farming information, medical care, electronic marketplace, and control of various farm implements via telemetry. These and countless other telecommunications-based services have been spawned by the spread of optical fiber nationally. As with computers, VCRs, and other technologies, prices in this market have declined steadily as the products and services have become widespread. Services that might have existed in 1989 only as luxuries are cheap and commonplace in 2009.
excellent price Mike has become adept	Mike sells the farm's produce via the screen, which not only enables him to contact a wide number of markets easily, but lets him use bidding as a tool for getting better prices. Further, the screen helps him engage in "proactive" selling: he uses it to contact small manufacturers of gourmet food products, hotel caterers, and others who might require certain fresh ingredients on schedule.
labor-saving support systems	The farm makes wide use of telemetry: i.e., remote control of equipment, reading of meters, etc. Given the limited amount of human labor at their disposal, Karen and Mike have designed their farm around the use of remote control devices that irrigate, monitor temperature, deliver fertilizer and pesticides, etc. Karen can control all of these devices from her screen.
milk volume is normal	The milking machines give Karen a daily report both on the amount of milk and on its fat content, mineral composition, and other information that will help her manage the dairy herd and sell the milk profitably.
temperature and humidity gauges	Finely attuned sensors, placed in the soil or among plants' roots, take constant readings on the crops' condition and microenvironment.
gopher chart	Special sensors detect very slight vibrations in the ground that are likely to indicate the presence of gophers or other small animals.
retail price for peppers	The screen tells her the current prices of items in the supermarket, which gives her a good indication of what the items might fetch in the open-air market in Richmond.
chats with the veterinarian	The video phone gives the isolated farmer a chance to socialize while taking care of business. After chatting with the veterinarian, Karen brings the cow to the screen to let the doctor have a look.
special little garden	Mike is constantly on the watch for new cash crops. Through his screen he has learned about the auricacia, a wild Brazilian plant he is trying to grow domestically for profit. He chose the auricacia after consulting the agriculture hot line, from which he learned that this plant could do well in the particular conditions (climate, soil, etc.) of his farm.
emergency message	The screen can receive messages even from "wireless" systems such as walkie-talkies and car phones.
tracer screen	Like a radar screen, the tracer screen is an electronic map of the farm that shows the whereabouts of livestock that are electronically "tagged."
shuts off the garden's alarm	The fence around the auricacia garden being less than cow-proof, Karen has installed an alarm that responds to disturbances by sending an urgent message to all the farm's screens. She has an override mechanism on her own screen that enables her to shut off the alarm that would have gone to Mike's screen.
water, feed, fertilizer	Readily available over the screen are computer programs that monitor the costs of materials, recommend feed mixes, etc.

In the text	Interpretation
agricultural programs	The screen gives Mike access to all the specialized information he can use for managing the farm intelligently.
consult easily with his doctor	Mike saves trips to the doctor and the physical therapist because he can consult with them visually on the screen.
work toward a degree	The screen lets Mike "attend" classes electronically: see the professor and chalkboard, ask and answer questions orally, take tests, and receive homework assignments.
Congressman is holding	A computerized queuing system logs the order in which citizens call, then notifies them on their screens when it's their turn to speak with their elected representative. The video phone helps travel-weary legislators maintain their political contacts and make themselves accessible to their constituents in a more personal way. The home screen is also an invaluable source of political information: a means of polling constituents quickly and directly, without having to rely on potentially biased pollster-supplied data. Legislators can, for example, send electronic questionnaires directly to the homes of constituents who are registered voters—in effect turning the poll into a true form of dialogue with the people they represent.

Appendix A:

FOREIGN DEVELOPMENT OF INFORMATION-AGE INFRASTRUCTURE AND CONSUMER SERVICES

The United States has long led the world in the creation and provision of telecommunications products and services. To take its lead for granted, however, places the U.S. economy on a perilous course. Already this nation has lost ground dramatically in the development and manufacture of televisions, radios, telephones and other communications equipment, and — ominously — computers. Other nations are pressing ahead vigorously to achieve breakthroughs in critical technological fields such as superconductivity.

All of these products and technologies come together to support what is called the information age. This age is witnessing the gradual merging of telephone, television, computer, and other devices as their functions integrate and as they increasingly share transmission media (notably, optical fiber cable, essential to "broadband").

This merging of products and functions opens the way to a new world of services that are information-based and consumer-oriented: home shopping; home banking; home access to educational and counseling services; customized delivery of movies and other special programming; telemetric services that let the consumer control appliances remotely.

We believe that the arrival of the information age is no longer a matter of prediction; it is, rather, a matter of fact and inevitability.

On the other hand, though the information age may be the inevitable result of converging technologies, the "inevitable" lead of the U.S. in this field is far from assured. America's telecommunications industry currently faces regulatory obstacles that hinder technological development. Some national governments, by contrast, play direct roles in fostering their domestic technological industries and in blocking foreign competition.

The "clippings" that appear in the margins of the following pages describe the information age infrastructure and information services as they are currently emerging in other nations.

Appendix B:

TYPES OF SERVICES THAT MAY EMERGE IN A BROADBAND ENVIRONMENT

TELEPHONY
MAY 9,1988

Sweden plans voice-data integration, Ericsson exec says

Sweden will be "the first country in the world to integrate its public data service with the public telephone network," said an official of L. M. Ericsson Telephone Co.

BUSINESS WEEK
MAY 9, 1988

How Alcatel turned a sinkhole into a success

The System 12 switch, a loser for ITT, is a winner for the French

When ITT Corp. sold control of its worldwide telecommunications operations to France's Compagnie Générale d'Electricité in late 1986, it looked as if ITT had put one over on the French.

As part of CGE's Alcatel, the former ITT unit is suddenly looking more like a prize catch.

The following list indicates some of the general categories of services that are likely to make significant use of the broadband network as a means of transmission and communication. This list is far from exhaustive. Notably, it does not reflect the vast possibilities for customized personal services that a broadband network would facilitate.

- TELECOMMUTING/TELEWORKING: Working from home on a personal computer, accessing materials and information, and, as needed, teleconferencing face-to-face with colleagues.
- PERSONAL LIBRARIES: Limitless capacity available for consumers to store print, music, video, still pictures. Remote library service: remote electronic access to virtually any published material.
- RETAILING: Purchase of full range of consumer goods via screen, including food, fashion goods, housewares, etc. Consumers may view goods, "try on" clothes, have products delivered, make payment by direct debit, etc.
- INFORMATION/ENTERTAINMENT: News/information services: sale of news wire, stock information, data bases, etc., as well as general or specialty news content. Entertainment: pay-per-view movies, special sports programs, pay-per-listen radio; video games. Special information services: opinion or market research surveys, association proceedings and records, minutes from club meetings, etc.
- TRAVEL: Booking of flights, hotel, tours, etc., over screen similar to those used by travel agents; plus, use of screen as "electronic travel brochure" for information, promotion.
- FINANCIAL SERVICES AND BANKING: Stock and other financial transactions via computer screen. Banking at home: direct electronic deposits, instant access to balance, electronic checkbook balancing, etc.
- REAL ESTATE AND HOME DECORATING: Sale of real estate via screen: view property on screen, receive "guided tour" from real estate agent in remote part of country. Home decorating: computer model of home displays various decoration, furnishing patterns on command.
- EDUCATIONAL PROCESS: Remote classrooms: seeing and hearing a class via home screen. Receipt of assignments and exams, submission of homework via screen or computer keyboard. Access to electronic libraries, face-to-face counseling, etc.
- SECURITY AND SURVEILLANCE: Telemetric (remote) monitoring of alarms, automatic notification of police or others.
- MEDICAL CONSULTATION AND MONOTORING: Telemetric devices monitor heart rate, other vital signs, transmit the patient's information to doctor at another location; data can go directly to medical computer for automatic analysis. Sophisticated imaging (MRI, CAT, x-ray)

TELEPHONY
MAY 9, 1988

U.K.'s Callscan plans U.S. entrance

U.K. Telephone management specialist Callscan will mount a sales campaign in the U.S. following successful trials of its call monitoring systems.

"There are excellent opportunities for us in the States. The serious competition is limited and we believe we have the edge on performance, quality and price."

TELEPHONY
MAY 9, 1988

France comes to terms with ISDN

While other national telecommunications administrations continue to test ISDN and quasi-ISDN systems, the French PTT has taken the bull by the horns and is running a commercial, tariff-taking service.

The St. Brieuc ISDN service recently has been joined by another in the city of Rennes nearly 50 miles to the southeast. Quantities of Alcatel CSN digital subscriber access units, which convert the conventional E10 CO to ISDN operation, also are being delivered to existing exchanges, and the first ISDN offering in Paris is scheduled for September of this year.

BEST COPY AVAILABLE

TELEPHONY
NOVEMBER 21, 1988

Hungary launches videotex service

Hungary plans to launch the Eastern bloc's first commercial public videotex system by the end of this year.

The system on which the service is to be based has been supplied by Siemens Austria, while Mupid Computer Gesellschaft, another Austrian firm, has been the sole supplier of terminals and PC adapter cards so far.

transmittable over phone line or from emergency vehicles via cellular radio. Face-to-face counseling from doctor at remote location. Doctors and other health care professionals can gain instant access to patients' medical histories, visual records, simultaneously viewing information on screen for purpose of discussing.

- ENERGY MANAGEMENT: Telemetric (remote) monitoring and control of lights, heaters, etc., for purpose of cost savings. Programmable controls can manage appliances automatically.
- PERSONAL AND GROUP COMMUNICATIONS: "Video phones" that let consumers view each other, or several different parties, as they talk in pairs or in groups. Sharing of other information during video phone calls on split screen.
- DOCUMENTS: Home computer/screen/printer as means of distributing documents: coupons, tickets, newspapers, etc.; two-way capability allowing consumers to send out letters, forms, photos, etc.

DATAMATION
DECEMBER 15, 1988

Videotex System

SINGAPORE - The Singapore telecom authority has begun field trials of what is claimed to be the most sophisticated video-tex system in the world. Called Teleview, the interactive system has cost $25 million to develop and allows users to make reservations, send electronic mail messages, and download software. By the end of 1989, the Teleview system is expected to be serving 450 terminals at business sites and double that figure in homes.

Appendix C

NEW EQUIPMENT SERVED BY BROADBAND

Which came first: the chicken or the egg? We face a similar dilemma in trying to predict what sorts of products and services will exist at a time when broadband cable is widely accessible to the public. The availability of communications applications will promote the spread of the cable; and the spread of the cable will enable and stimulate the development of communications applications. We believe these developments must happen, to some degree, simultaneously.

The following are examples of new communications products and equipment that we believe will emerge in a broadband environment. These products exist already, in limited commercial applications or in the laboratory. We believe that the spread of broadband will encourage large-scale introduction of these and/or similar products, lowering prices and encouraging further product development.

Of the products listed below, some appear in our profiles and some do not. Some would stand alone, while others would combine in various ways in order to deliver a service.

For example, a combination of screen, audio response unit, expert system, and other technologies might be among the components in a TV/video machine that could respond to voice commands.

VIDEO DISPLAYS

We believe that most video displays would be capable of serving more than one purpose (except perhaps displays on appliances), such as viewing a movie or conducting a video phone call. Uses of displays and audio components would entail some mix of sending, receiving, or transacting depending on the nature of the content and the user's wishes.

- Large projection screens
- Large flat screens
- 3-D displays
- Holographic displays
- Projection on transparent surfaces
- Wraparound head gear/personal viewing screens
- Miniature personal screens
- Screens built into other home appliances
- Touch screens
- Freeze-frame videophone
- Full motion videophone

Large Projection Screens

Images are projected onto screens from a two- or three-lens color projector several yards away. Small systems (four to seven feet wide) are sold today for home use or in sites such as bars, lounges, etc. Larger systems costing $50,000 and up are increasingly used in business and theatrical applications now. Projection systems generally require low lighting levels to assure bright/clear images. The arrival of high-definition TV (HDTV) would make such systems even more attractive (though more expensive at first) because of the crisper rendition of the projected image. HDTV, as shown on large screens, has been dubbed "telepresence" because the image's high impact gives viewers the sense almost of "being there."

Large Flat Screens

Images appear on large screen (20 to 100 feet). In contrast with the projection system, there is no need for a separate unit to "throw" the images. Images are fed directly onto liquid crystal displays or other new display technologies signalling the color and brightness of each picture component. This approach allows these systems to be used in bright-light conditions (such as outdoors where Mitsubishi "DiamondVision" systems are used in sports arenas).

COMMUNICATIONS WEEK
JUNE 22, 1987

European Telecom Authorities Promote Competition, But Outsiders Still Find Many Barriers to Markets

The development of a digital mobile system to begin serving all of Western Europe in the early 1990s is expected to generate a huge market. But American manufacturers have yet to express a real interest in developing this technology, European sources said.

And little competition is expected to develop in European markets in basic local and long distance phone services.

TELEPHONY
SEPTEMBER 28, 1987

VANs in Japan

Japan's emerging value-added network market may be the open door American firms have been looking for to get a foothold in the Japanese telecom market.

With more than 3000 company users, Fujitsu's Fenics VAN is the most extensive computer network in Japan. This is partially due to Fujitsu's commanding position in the Japanese mainframe computer market.

The VAN market in Japan opens an opportunity for U.S. firms with experience and expertise. It also implies that the door may swing the other way as Japan's VAN operators gain experience.

TELEPHONY
JANUARY 18, 1988

Sweden to link leased line phone services

Sweden will become the first country in the world to fully integrate its leased line data services with its public telephone network.

"The next logical step may be to integrate services such as the public packet switched networks into the telephone network.

Ericsson already has begun discussions with other Scandinavian telecommunications administrations to supply similar systems.

TELEPHONY
JANUARY 25, 1988

Alcatel to expand Chinese efforts

Companies within the Alcatel group have won major orders to expand China's burgeoning telecommunications infrastructure.

Flat screen systems are now intended for high-priced professional users, but the technology will evolve to permit use of such systems in homes during the mid- to late-1990's at consumer-oriented prices.

3-D Displays

Three-dimensional TV adds the appearance of depth to the conventional TV picture. Images appear on TV screen, but seem to "jump out" or extend backwards from the screen surface. Several TV manufacturers (Toshiba, Matsushita, JVC, etc.) have demonstrated prototypes in color and monochrome; all require the use of special view glasses (like those of the old movie novelty 3-D format). Coca Cola demonstrated a mass market version, for use over regular TV, during the 1989 Super Bowl. Video can be transmitted within current broadcast/videotape formats. NEC has demonstrated a $30,000 3-D display system intended for institutional (e.g., museums, merchandise displays) and educational applications; it may be available in 1991.

Holographic Displays

Holograms permit the appearance of a 3-D image in "thin air." Holography uses laser light projection of images, which can be scanned and displayed on a variety of surfaces. Holographic images are now used for art, medical, and military applications, with otherwise limited commercial development so far.

Projection on Transparent Surfaces

A still or moving image is displayed on glass, generally to allow users to see through the transparent surface while simultaneously watching the image. The process emerged from military uses (e.g., cockpit gauge or target data is projected onto a cockpit windshield so that a pilot can see it while looking through the windshield). The same process is being introduced into 1989 model automobiles, allowing drivers to see speed, fuel, radio dial gauges, or other important data without glancing away from the road. Such systems are widely used in TV studios for teleprompter script projection, as in newscasts.

Wrap-around Headgear/ Personal Viewing Screens

Video images are fed into transparent material that is worn over the eyes (e.g., special glasses or a face mask on a helmet). Such systems allow individuals to see messages or view other important material as they move around a room. This technology is used in military applications (e.g., tank or aircraft manipulation/training) and may be used in some medical or educational experiments.

Miniature Personal Screens

Screens intended for private viewing of over-the-air broadcast, wireline-fed, or personal videocassette programming are now available. Sony, Casio, and other manufacturers offer such receivers with three-inch screens for under $100.

Screens Built Into Other Home Appliances

These screens serve for video, text, or other information pertaining to the use of a given appliance. The video screen built into recent models of the Buick Riviera, which shows gauges or other car data requested by the driver, could be hooked into an onboard camera to show other video material.

Touch Screens

An overlay is attached to the conventional video display and programmed so that when a user

TELEPHONY
JANUARY 25, 1988

Telecom Canada offers dial-in X.25 service

Telecom Canada's Datapac network now provides dial-in X.25 service in eight major Canadian cities, with expansion into nine other cities planned later this year.

TELEPHONY
FEBRUARY 22, 1988

NTT jostles through a tough period

NTT is aggressively expanding the deployment of digital and fiber optic technology throughout its national network, and preparing for the first commercial, large-scale offering of an integrated services digital network in the world.

Not only is it leading the world's carriers into commercial ISDN deployment, it also is constructing a commercially available 1.6 Gb/s fiber optic route between Tokyo and Nagoya. Finally, its exhibition at last autumn's Telecom 87 demonstrated the stunning variety of services and products it has developed but is not now marketing, including superior terminal equipment and sophisticated video applications.

"Japanese terminal equipment manufacturers have been aggressive and very active in pursuing the development of ISDN-compatible terminals in Japan."

TELEPHONY
FEBRUARY 22.1988

International telecom spending on the rise

As the international telecommunications community's commitment to the integrated services digital network, or ISDN, matures and is manifested in the public network, the PTTs' ability to compete for large customers will increase – and so will their incentive to compete.

TELEPHONY
FEBRUARY 22, 1988

Bell Canada tries voice recognition

In a joint venture with Bell-Northern Research and Northern Telecom, Bell Canada has launched a voice recognition system trial that will provide customers of the Montreal local calling area with an interactive 976 service directory.

touches a certain point on the screen (coordinating with an image/prompt on the video), certain actions are implemented (e.g., a specific new image is displayed). The screens use various infrared or other technologies to establish the x and y coordinates that are being touched and relay that information to a processor, which generates the appropriate video action. Individual touch screens now add about $50 to $80 to the cost of each display and are used in engineering, education, and retailing applications, generally tied to interactive videodisc and/or computer applications. Depending on how the video/data program is arranged, such touch screens can eliminate the need for additional keyboards or keypads for viewer input.

Freeze-Frame Videophone

This device is a camera and video screen combination that transmits a still picture and operates over a voice-grade telephone line. It is commercially available today for about $400. This product has not achieved widespread acceptance yet, in part because few customers have an immediate need for such a capability, and partly because few consumers know such a capability exists.

Full Motion Videophone

This device, which uses a full-motion camera and an integrated video display, has existed experimentally since the 1960s and is now under serious development in Japan. Products now in design would require 64-kilobit transmission lines, which would be problematic for today's telephone network—but routine for broadband or ISDN lines.

AUDIO EQUIPMENT

Broadband will stimulate the introduction of many audio components that fall into the category of voice recognition and analysis. These devices would give the user an alternative way of controlling equipment when his/her vision and hands are otherwise occupied (e.g., a pilot or operator of complex equipment). For the casual user, voice recognition units may eliminate the need to use hand controls or keyboards for issuing commands. High-quality sound reproduction units may be imbedded into other communications systems (e.g., TVs or video call units) or may be used independently for music, voice messages, or personal libraries of audio material.

- High-quality sound reproduction units
- Voice activation/response devices
- Text-to-voice converters
- Voice-to-text converters

High-Quality Sound Reproduction Units

These components are similar in function to today's "stereo" records and tapes or compact disk units. They reproduce stored audio, or "live" audio signals with great fidelity, processing digitally encoded sound. A digital signal of more than 100,000 bits per second is virtually indistinguishable from a "live" performance. Microcomputers that use CDs as storage achieve transfer rates of up to 1.4 million bits a second. Voice reproduction units such as conventional telephone handsets will gradually give way to sets that can make better use (e.g., greater fidelity and user controls) of the expanded bandwidth available in a home served by broadband. There will also be units that can receive "radio" signals over broadband to deliver extremely high-quality audio programming. We expect these units to be priced

TELEPHONY
FEBRUARY 22, 1988

Telecom voices cross continents with messages of progress

Austria

an electronic directory will be made available on the videotext system as of March 1988.

Bahamas

The expansion of the packet switching service, facsimile, local data networks, paging service and enhanced subscriber features will continue as we strive to meet the increasing demands of our customers.

Bermuda

All of our central offices are now digital and are interconnected by fiber optic cables.

Canada

The overall goal of the modernization programs is to establish a digital infrastructure in key locations across our network by the mid-1990s.

The company will also test a new interactive videotex service for residential customers this year, featuring a North American protocol and terminals manufactured in Canada.

Cyprus

A packet switching public data network is planned to be introduced in 1989. Videotex service, as well as credit card telephone service are expected to be introduced in 1991, while the introduction of Satellite Business Systems is expected to take place before 1992.

Denmark

We have today one of the highest telephone densities in the world, and the rates are definitely among the lowest in the world. We have fully extended public data networks based on X.21 and X.25, respectively, and a mobile telephone network covering 100% of the area.

Jutland Telephone's strategy in order to meet future competition takes the offensive as well as the defensive stand.

Finland

Optic cables are also making powerful inroads into wideband local networks alongside coaxial cable technology.

The first ISDN network trials began in Finland in 1987.

The use of videotex, teletex and other services in the telecommunications network is also increasing.

Audioconference and videoconference services are gaining acceptance as the coding methods are improving and the cost of digital transmission is decreasing.

moderately and in a range comparable to present-day telephones and stereo/CD systems.

Voice Activation/ Response Devices

Voice activation components are devices that "interpret" spoken commands into data control signals that activate a circuit. These components, now used in military applications, are relatively expensive, require that they be "tuned" or imprinted with the particular user's voice, and have limited "vocabularies" that they can interpret. In the laboratory, speech analysis devices are advancing to the stage of being speaker-independent (i.e., being able to understand commands, no matter whose voice utters them). On the "low end" of voice activation devices—under $20 range—are "clappers" (devices that turn on lights in response to clapping hands) and "presence detectors" (which activate circuits when they detect motion or the interruption of light patterns).

Text-To-Voice Converters

Voice synthesis chips for PCs are available today for nominal prices (e.g., $25). These chips can be driven by user-written commands or commercial software to translate "text" into a voice rendition. The better the software and chips used, the better the quality of artificial voice rendered. On the "low end," today there are voice response devices that rely on stored voice messages rather than voice synthesized for the occasion (e.g., warnings in cars that "the door is open").

Voice-To-Text Converters

Voice-to-text converters are components that convert live or recorded human speech into a stream of text. At present these units are custom-made and priced in the $10,000 to $30,000 range; they offer good, but not infallible, accuracy. They generally must be tuned to the user's voice (imprinted), and require at least a brief pause between words. Rapid advances are being made in improving their capabilities, however; we expect aggressive research toward development of this class of component due to the potential payback in labor (stenographic) savings.

PROCESSORS

Processors are computers that are specialized for a class of functions. Computer-TVs would be particularly adept at offering user control over video data streams (e.g., backup, speedup, freeze-frame, edit objects in the "picture," etc.). Neural computers would specialize in mimicking human thought processes; the category of artificial intelligence processors known as "expert systems," already widely available, "bottles" the expertise of a human expert in a given discipline, enabling others to consult that expertise as needed.

- Computer-TVs
- Faster computers
- Image recognizers/analyzers
- AI processors (expert systems)
- Neural computers
- Appliance/equipment diagnostic computers
- Household robotics
- Printers and facsimile machines
- Optical switches

Computer TVs

Digital TV sets include several components. One of them is a processor that is specialized to perform image processing functions on video "data streams." This unit could, for example, clip and enlarge the image, recompute the

France

We can digitally transmit speech, written documents, data, still and TV pictures to any location in the national territory.

We recently initiated, through French-German cooperation, efforts for standardizing products, creating European value-added services and bringing services into line.

Hong Kong

About half of all calls are now carried over a fiber optic cable network, one of the largest working urban optical fiber networks in the world.

A wideband network is in place and can be enhanced to carry interactive and video services such as cable television, home banking and remote shopping.

Israel

General development of the Bezeq network will use digital technologies in switching and transmission systems combined with fiber optic cables in the interurban trunk system.

This year will also see the continued expansion of the packet switched data network, including the introduction of videotext and electronic mail services.

Japan

We are also looking forward to the start of our commercial ISDN services this spring between Tokyo, Nagoya and Osaka.

Korea

The Integrated Digital Network will be completed by 1996 and ISDN will be realized by year 2001. There will be 20 million telephones, twice the present level, by 2001.

We plan to make ISDN-like services already available to the public by this circuit switched digital network, even before the full-scale ISDN is implemented. Besides Group IV fax, other uses of CSDN include compressed video transmission, personal computer communication, teletex, videotex, and bulk data transmission.

Portugal

The introduction of ISDN in Portugal, scheduled to begin in the first half of the 1990s, will enable the reduction of the gap between Portugal and the other countries of EEC and it is the strategic objective of Portuguese telecommunications.

Saudi Arabia

In general, future expansion of the national transmission network will be accomplished with digital facilities using digital microwave radio, digital coaxial cable, and fiber optic cable in preparation for the evolution of the network toward an integrated services digital network.

The ministry is presently installing a public packet switch data network using the newest technologies available.

data stream as if the image were viewed from differing angles, isolate "objects" in the image for exclusion, replacement, move the "center" of the screen image, etc. These special functions cannot be performed unless the image is available in digital form. Such functions are being performed already in laboratory environments such as MIT's Media Lab.

Faster Computers

The processor speeds of today's microcomputers are akin to those of mainframe processors of 20 years ago. Present-day commonly available mainframe speeds have skyrocketed to near the 100 million instructions-per-second range. Super computers run even faster. Much of the progress in speed is attributable to large-scale integration of circuits and advancements in chip miniaturization. Greater speeds are on the way; current research and development in this area is directed at parallel processing technology, superconductivity, and experimentation with optical computing "circuits."

The benefits of this research will begin to reach the commercial market within the timeframe of our vision. Consumer-oriented spinoffs expected include the embedding of more computing intelligence into many household and automotive devices than is the case today. We believe retailers and information providers may employ specialized large-scale processors to drive the communications applications they offer to consumers.

Image Recognizers/Analyzers

Although experimental at the moment, image recognition components are available. These devices "view" an object, whose image they translate into digital form for analysis and comparison with memorized images (e.g., apples, oranges, a hand). Current limitations stem from their limited capacity to store "known" objects in sufficient detail to discriminate between similar things, the massive computing power required for the analysis, and the resulting cost. The problems of storage capacity and computing power probably will be solved within the timeframe of our vision.

AI Processors

Artificial intelligence processors have been around in primitive form for many years. The artificial intelligence referred to here is the codification of human "expert" thought processes into computerized "expert systems." For example, medical specialists have been interviewed extensively to record the thought process they bring to diagnosis of a wide array of symptoms. That thought process was converted into a logic path for a computer to follow. Highly promising (and quick) results are available when the AI machine is given a symptom set and asked for a diagnosis. AI expert system software is available for PC users at prices ranging from $100 up. The software does not start as an "expert" but must be "taught" by an expert in a subject of the user's choice. After a lengthy series of interviews, the software is then able to mimic accurately the expert's thought process. This technology is expected to continue developing, and to take more commercial forms as computing and storage capacities continue to expand.

Neural Computers

Neural computers were advanced several years ago as an alternative to the processing methods of conventional logic processors. The difference is that neural designs were to mimic human thought processes more closely than conventional comput-

Singapore

Singapore Telecom's role is to contribute to Singapore's development as a leading communication and information center. In recent years, we have built one of Asia's most advanced information communication infrastructures, helping Singapore develop into an international telecommunication hub with modern networks and systems.

A trial is set for mid-1988 to test Teleview, a highly sophisticated videotex system with photographic quality display, keywork search and ability to handle Chinese characters. The interactive system will allow users to access a wide range of computer based information on business, finance, education, entertainment, travel, tourism, government information and electronic directories.

Taiwan

To meet the rapid growth of data traffic, the second packet switching data network is under construction. Videotex has enjoyed great success since its introduction in 1987.

BEST COPY AVAILABLE

United Arab Emirates
The corporation has also established Data Network, or Emdan, operated through most advanced packet switch transmission networks, together with telefax, videotex and other related date information, which is the most advanced technology of the 20th century

West Germany
The Bundespost has decided to test the market and to simulate operating conditions so that present needs for wideband communications can be made concrete and be developed

The setting up of a preliminary wideband network, begun in 1986, should serve this purpose

ers have. The circuits in neural computers were expected to resemble the processor structures found in the human brain. The expectation was that neural computers would be far easier to command and program than conventional computers because they would have a similar "thought" process. Scientists still have a very long way to go before they can say they "understand" the human brain; but intense interest in this field by researchers makes it likely that we will see some fruits of their investigations in the decades ahead.

Appliance/Equipment Diagnostic Computers

Today's personal computers, copiers, printers, and other devices have built-in self-diagnostic processors that test or "sense" the proper functioning of the devices' components and report problems for corrective action. Automobile service centers have similar devices to analyze complex problems in cars. The cost for the diagnostic processors varies but can be very low, especially if such devices are incorporated into the equipment's design and manufacture. We expect a continuing trend toward the placement of such components in a wide range of equipment.

Household Robotics

The line between robotics and electromechanical devices (e.g., a dishwasher) is sometimes difficult to draw. The sophistication of appliances that have "thinking" ability, or programmability (e.g., microwave ovens, VCRs) has increased dramatically with the introduction of inexpensive processor chips and memories. Zenith has retailed a robot "kit" in recent years, priced at about $1,000. The robot's movements are controlled by user-written programs. In commercial applications, the machine tool and manufacturing industries have had good success with robots in assembly line roles—especially in Japan and in some U.S. auto factories. We anticipate a persistent evolution toward more and more stored-program-controlled devices in the home. They will not look like archetype "robots" but will automate the performance of household chores with some degree of flexibility.

Printers and Facsimile Machines

Over 80 percent of the almost 20 million personal computers used in residences today have some form of printer for hardcopy output. These printers are of varying quality and some are relatively inflexible (one font, no graphics). Facsimile printers can act as dual-purpose devices, serving not only to print "fax" documents but as a general purpose computer printer. The main obstacle is the need for special paper; the next generation of fax machines (Group IV), available in 1989, will be able to use regular paper. Faxing is increasing in popularity, and units have decreased to the $800 range. Computer printers are priced as low as $150.

Optical Switches

The modem communications switching functions done in telephone central offices are presently based on stored-program digital computers. As with other computer processors, the speeds these switches achieve have risen steadily over the years. A new technology, called optical switching, is under study for use in these switching computers. The technology offers great promise as a basis for a speedier switch, and is expected to handle optical signals faster (because the signals may not have to be converted back to

TELEPHONY
MARCH 7, 1988

Germany turns to French videotex

West Germany will drastically change its public videotex policy and drop its present strategy, which is similar to the British Telecom operations, in favor of one based on France's Teletel service

In France, more than 3 million Minitels, to Teletel terminal, are in operation, all either given away or rented at a nominal fee. Information providers, such as traditional publishing companies, sports clubs and mail order companies, on the French system number close to 7000

The U.K.'s British Telecom reportedly also has been considering a Teletel-like approach to its Prestel service

TELEPHONY
MARCH 28 1988

NTT prepared to offer ISDN

Nippon Telegraph and Telephone, Japan's local exchange monopoly carrier, is ready to begin offering ISDN basic rate service in three urban areas, once it has obtained regulatory approval

INFORMATION PROCESSING
APRIL 4, 1988

Nokia skates into high tech's big leagues

The Finnish company is becoming an electronic powerhouse. . .

TELEPHONY
APRIL 25, 1988

Introduced at Interface '88

On the packet switching front, the Australian company Network Automation released its T-1 packet switching system to the U.S. and European markets. Switching more than 6000 packets per second, the UltraNode HP switch employs parallel processing based on multiple Motorola MC68020 microprocessors.

electricity for interpretation). The first commercial trial of optical switches is expected in the early 1990s—well within the timeframe of the vision.

TELEMETRY AND SENSORS

Telemetry and sensor devices are input collectors not already discussed under the category of audio components. Many of these devices are already available. Devices of this kind may proliferate widely in a broadband environment, because the enormous capacity of broadband will remove the obstacle of transmission. Today, most remote devices require their own "twisted pair" of telephone wire—an expensive and troublesome proposition.

- Fire detector
- Energy consumption controller
- Presence detector
- Vehicle detector/tracker
- Medical monitor bracelet
- Humidity detector
- Cameras
- Image scanners
- Device monitor

Fire Detector

These devices are in widespread use already in American homes (smoke detectors). Usually they are installed as stand-alone devices that alert residents of fire. Some devices of this kind are connected to centralized emergency response services; with broadband, it would be far cheaper to do so. The basic principle of fire detection and remote alarm can be adapted to other sorts of alarm situations: e.g., unwanted presence of moisture, movement, cold temperature, etc.

Energy Consumption Controller

These components control the rate or timing of energy consumption according to parameters established by the homeowner or utility company. Thermostats for heating units can keep temperature within a narrow range. Some units are "smarter," however, and adjust temperature within a narrow range that is appropriate to the time of day. Some units are connected to utility company controls that, at times of peak public energy consumption, turn off units (e.g., washing machine, dryer) in order to save the utility's customers the cost of buying expensive emergency power. Control units are available off the shelf for about $100.

Presence/Entry Detector

Devices that sense the presence of a human (or animal) are already available in the consumer marketplace. Usually they are triggered by a sound, which causes them to signal the house's circuitry, turning lights or other appliances on or off. These devices can be configured to alert the consumer, via screen or telephone, of some condition. These detectors are inexpensive (under $30) and are expected to come into widespread use.

Vehicle Detector/Tracker

In the commercial setting, systems are being developed that can track cargo as it moves around the country. These systems rely on small transmitters affixed to the cargo or container that signal orbiting satellites. They are suitable for tracking hazardous or expensive materials. At the consumer level, some toll road districts intend to improve traffic flows by offering a low-power, inexpensive transmitter that can be affixed to a car. The

TELEPHONY
APRIL 25, 1988

Slipping through the cracks

Liberalization is coming to West Germany next month, but the monopoly walls clearly have not fallen down.

Waldemar Buske, chairman of Deutsche Fernsprechgesellschaft, a telephone and PABX maker, believes that West Germany should learn from mistakes already made abroad.

"It would be a great mistake to allow the Bundespost to get rid of its high technical standards and allow in a flood of cheap, inferior imports. Much of the U.S. budget deficit is due to telecommunications imports," he notes.

TELEPHONY
APRIL 25, 1988

ISDN: Made in Germany

The Deutsche Bundespost, perhaps more than other PTTs, sees the integrated services digital network as key to the future development of telecommunications services. And in this view it retains the more or less unanimous support of its domestic suppliers.

Not surprisingly, then, the Bundespost to date lays claim to the most extensive and international-standards-compatible ISDN trials. By August a fully commercial ISDN service is due to be launched. By 1993 the Bundespost hopes to meet 90% of the West German demand for ISDN lines.

By the end of 1989, 60,000 West Germans will be using ISDN. By the end of 1990, some 200 ISDN exchanges are planned to be in operation and by 1993 some 600 exchanges, or 20% of all local exchanges, are due to be ISDN. With these 600 exchanges, the West Germans plan to provide a nationwide ISDN service using remote concentrators and multiplexers.

car can then drive through the toll gate at full speed. A sensor at the gate would read the identity of the passing vehicle, and the driver would be billed monthly for toll charges. The reader device concept opens up the possibility of traffic monitoring systems that report to drivers on the status of various routes.

Medical Monitor Bracelet

A small "bracelet" that measures heart rate and blood pressure is already available in some supermarkets or in store use. It would be possible to extend the measurements to include temperature. At present the readings are displayed for the user to see, although there is no technical reason why those readings could not be transmitted to somewhere the user chooses. These units are expected to cost under $50.

Humidity Detector

Humidity detectors are available at garden stores. These small wand-like devices detect the humidity levels of soil. The detectors could be connected by cable or antenna/radio transmission to a central data collection point (e.g., a farmer's computer).

Cameras

There is a rich variety of full-motion video cameras available in the marketplace. At the inexpensive end, Fisher Price makes a child's black and white camera with videocassette that captures moving pictures, that sells for $89. There are many "camcorders" available for home use that sell in the $700 to $1,300 range. Professional TV camera models cost upwards of $10,000; today's HDTV cameras are still in the $500,000 range. Besides regular full-motion cameras, there are specialty items like "range cameras" that capture depth of field information useful in digital computer-TV work. In security and surveillance systems, cameras are not usually integrated with a cassette recorder rather, they pass video signals directly to another device or display. Ten percent of VCR homes now have a video camera. We expect that cameras of all kinds will continue to decrease in price.

Image Scanners

A specialized class of image scanner is used in inventory applications and supermarket checkouts to "read" product bar codes. This type of device is now becoming common as a data input device for manufacturing, hospitals, libraries, and general retailers. All of these devices can interface with computers. A similar imaging concept is used to scan typewritten pages, converting them to a stream of text for subsequent text processing. These page scanners are priced in the $5,000 range.

Device Monitor Systems

Various kinds of business equipment, such as computers and copiers, have built-in diagnostic devices that can alert technicians at a remote location when something goes wrong and indicate what the problem appears to be. Increasingly, technicians can fix the problems remotely as well. Computers have become a common component in cars, televisions, and other items. Remote monitoring and diagnosis will follow as services supported by these computers.

TELEPHONY
MAY 2, 1988

Japanese win predicted in European ISDN

Systems Dynamics, the U.K.-based telecommunications consultant firm, estimates that by 1992, Japanese terminals will account for 80% of ISDN attachments available throughout Europe, a market worth $2 billion per year.

TELEPHONY
MAY 2, 1988

Northern Telecom, Philips announce Chinese PBX plans

Canada's Northern Telecom and Philips Business Systems of the Netherlands have both recently made inroads into the digital PBX market in China.

Philips' plans call for the eventual manufacture of some 100,000 lines per year of Sopho S digital PBXs.

Philips estimates the Chinese market for modern PBXs will grow to 700,000 lines within the next three to four years. The company is aiming for at least a one-third share.

France's Alcatel, through its acquisition of ITT, and West Germany's Siemens already have manufacturing facilities in China for public switching equipment.

■

Appendix D:

DELIVERING THE PROMISE:

AN INDUSTRY CHALLENGE, AN INDUSTRY OPPORTUNITY

TELEPHONY
JUNE 6, 1988

Against the odds

Telecom Canada members found that the environment posed serious challenges to its national FO network.

One of the world's longest fiber optic cable networks cuts through some of the world's most hostile terrain.

The network had to be built. If Canadian businesses were to remain competitive, they would need better digital transmission facilities, Telecom Canada believes.

"Companies with large data communications requirements will now get consistently better service and lower bit error rates.

This means we in Canada will be as competitive as anyone in the world when it comes to telecommunications."

Introduction

In the preceding pages we have described a vision in which American consumers in the near future may perform their work, entertain themselves, receive medical and educational guidance, manage their money, and talk with each other—using a new generation of communications products and services that add greatly to the ease, speed, and pleasure of conducting these and countless other everyday activities.

As such, we are making what we feel is a very modest assumption: that major advances in communications and related technologies, already proven, soon will reach the mass consumer in the form of new products, services, and delivery systems. What would be extremely unlikely would be the notion that our level of communications products and services could stay in one place—any more than the auto industry could have frozen at the "Model T" stage.

But progress, however likely, is not inevitable. It is possible that we will witness the emergence of a dynamic new age of economic growth in the United States, empowered by our leading role in bringing about the "information age"; it is also possible that we will enter a period of chaos, consumer frustration, lost opportunity, and increasing dependence on the products, services, and technological direction-setting of other nations.

We choose the optimistic view. The purpose of this coda is to relate what we think are the essential ingredients, or circumstances, for realizing our "vision" of the communications future.

Our vision supposes a unified public telecommunications network based on industry-wide standards and a renewed infrastructure. This unified public network, we believe, will become a chief vehicle both for delivering information age services, and for stimulating their creation.

In speaking of standards and unification, we allude not to some body of rules imposed by fiat, but to a consensus reached by the many members of the information industry: programming providers (including movie producers, news organizations, publishers); service vendors (e.g., telemetry-based services; answering services; value-added information processors); equipment manufacturers (e.g., both for vendors' and consumers' use); and communications transporters (e.g., cable TV companies, TV and radio broadcasters, telephone companies).

We believe that the establishment of standards and the renewal of the public infrastructure—products of the information industry's shared vision of a leading U.S. role in the information age—will be for the benefit of all members of that industry, and the public at large; they represent the proverbial rising tide that raises all boats.

We believe, foremost, that U.S. leadership in the information age, such as we have posited in our vision, requires contributions from many segments of society: the members of the information industry, joined by legislators, members of other industries, and the public. No one body, and certainly no one company, can deliver the vision we have described. To paraphrase Benjamin Franklin, we can all rise together—or sink separately.

TELEPHONY
JUNE 6, 1988

No. Telecom launches European packet offensive

Northern Telecom, which like AT&T is trying hard to crack Europe's telecommunications markets before 1992, is concentrating on solidifying its hold as Europe's No. 1 dedicated public data network supplier.

Northern Telecom's most recent success was its introduction of the first X.25-based private data network in Norway. The network will be operated by Dennorske Creditbank, Norway's largest banking group.

Last month, Sweden's national carrier Televerket chose DPN-100 for its public network. A year ago, Sweden's national savings banks, SPAD AB, chose Northern Telecom's switches for their private data service. Barclays Bank in the United Kingdom, Generale de Banque in Belgium and the United States Federal Reserve Board are among other banking networks to use Northern Telecom equipment.

TELEPHONY
JUNE 13, 1988

Singapore offers network links

Singapore Telecom has become the latest operator to link up with its counterparts overseas and offer business customers one-stop-shopping for international services.

TELEPHONY
JUNE 27, 1988

Telefonica's aggressive agenda. . .

This PTT aggressively has expanded its reach into international markets. . .

Telefonica unveiled plans to build factories in the U.S.S.R. to make telephones, pay phones and rural communication systems, and to expand its interests in Puerto Rico to include the manufacture of key telephone sets. It bought a Brazilian telephone exchange plant and is now considering establishment of a number of complementary manufacturing facilities in Grenada, Jamaica and Santo Domingo.

Telefonica also signed a new contract with EDS this year aimed at speeding the adaptation of Tesys to Federal Communications Commission requirements. "Having General Motors or companies like that using Spanish technology is something to be proud of. . ."

Telefonica hopes to have something like 200,000 terminals on this, Europe's second largest public packet switched network, by 1992.

I. Market Environment Conducive To Realizing The Vision

The choice revolution

Harkening back to Marshall McLuhan's famous adage, "the medium is the message," we believe that the way informational content is made available has a critical influence on its value to the user.

Americans are voracious consumers of information in its countless forms. Ninety-seven percent of American households have one or more TV sets; 93 percent of U.S. households have one or more telephones. It is becoming increasingly difficult to find American households that do not contain many or most of the following: radios; record players; tape recorders; cameras (still; movie; video); VCRs; home computers; compact disk players; fire and burglar alarms; and libraries (shelves of books; records and tapes; photo albums; videocassettes; floppy disks). Increasingly rare is the home that does not subscribe to magazines, newspapers, book-of-the-month clubs, or cable TV programming; fast shrinking is the number of cars without cellular phones.

Consumers certainly have plenty of media from which to choose; but very little choice with regard to media function or usability.

For instance, most media are discrete and unconnectable: the consumer must turn to the TV for one kind of informational content, the telephone for another, the radio for another; there is no way to enter a newspaper article into the word processor without typing it in (or buying a very costly piece of equipment), much less a way to make sure the lights are turned off at home without going there.

Most media (telephony being the major exception) are "monofunctional" by virtue of being monodirectional: they transmit information to the consumer (TV, radio, records, etc.) but do not give the consumer the opportunity to transmit back in kind or otherwise. Today's media, generally, offer consumers only a "take it or leave it" choice. There is little service available, for instance, in the way of multi-way real-time video, real-time data, or delayed voice transmission; telemetry-based services remain experimental or very costly.

Unquestionably there are cases today of video conferencing, data base products, telemetric services, and the like; at the corporate and large organizational level, these and other "information-age-type" services are spreading rapidly.

We contend, however, that these services cannot and will not reach the general public under present conditions due to reasons of impracticality, unaffordability, and unfamiliarity. Essential to "democratizing" the availability of such services is the establishment of an advanced public network, based on generally accepted standards, that puts a higher level of technology within reach of the average consumer.

The network that we envision—of which the central element is optical fiber-based broadband that connects to the home and business—inherently removes the barriers that separate different media and restrict the majority of them to monodirectional status.

The fact of interconnectivity (TV, telephone, other signals combined on an ISDN-based network) will, we believe, spawn countless new products and services, some of which we have hypothesized earlier in this paper; but without even taking new

CIO MAGAZINE
JULY 1988

Computer Land

Singapore's history as a great international commercial center is carried on through the government's coherent approach to exploiting information technology.

This is the future of instantaneous access to information services and electronic data interchange, a tight economy run with the ultimate efficiency of computers. And it is nearer than one might think; it is being architected on the tropical island of Singapore. . .

An aggressive Telecommunications Authority in Singapore has put in place several firsts. An Integrated Services Digital Network (ISDN) is already being field-tested with a multinational company. All the major switching centers are connected with fiber-optic wiring, and it is only a matter of time before these lines reach out to city blocks. Videotex, which has taken off so successfully in France, is also in the offing; a pilot scheme is already planned, with selected businesses taking part in what we call "Teleview."

Singapore is getting ready, planning for the implementation of ISDN. A 2-year ISDN technical field trial was successfully concluded in 1987. . .

An ISDN pilot service is targeted for the end of 1988 with wide-scale commercial offering of service targeted for the early 1990s.

TELEPHONY
JULY18, 1988

Siemens becomes service provider

Siemens will become an international telecommunications service provider via a special subsidiary set up to handle its operations business.

The company would concentrate on text and data communications services and would exploit Siemens' existing international corporate network. This network currently covers 80,000 terminals and 400 nodes in 50 countries.

BUSINESS WEEK
JULY 18, 1988

Sweden sees the way to an all-optical switch. . .

Researchers at Bell Labs, NEC, and other high-tech companies around the world are racing to develop an all-optical switch.

Now, Sweden's L.M. Ericsson has what it claims is the first practical optical-switching module. It can take four outgoing streams of data and direct each one to any of four outgoing lines. Together, the modules could yield an all-optical computer for telecom switching. "It's really impressive," says Robert L. Carlson, marketing manager for Crystal Technology Inc., a Palo Alto (Calif.) supplier of fiber-optic components.

product/service development into account, we contend that the age of universal broadband connection, on which our vision is based, is a revolution of choice: one in which consumers may continue to enjoy today's myriad communications products and services—but with far more customization and control than ever before.

We expect that content will become available in many combinations and forms, e.g., real-time or time-delayed; one-way or multi-way; as video, audio, print, or a combination. We foresee a breakthrough in functionality in which, thanks to network interconnectivity, built-in equipment intelligence, and new user interfaces, communications services will adapt to the consumer rather than the other way around.

For the members of the information industry, whether providers of content, equipment, service, or network facilities, the affording of choice to the consumer equates to the selling of products and services. The "choice revolution" is also a revolution of market opportunity.

Seller meets buyer: key criteria for successful information age services

The ingredients of the information age are here today, poised and waiting for the catalyst: a united public network.

We have an educated information-hungry public; an endless flood of informational content; a vast and robust information industry; and the technology sufficient to bring these elements together in exciting and dynamic new ways.

As such, we believe that there is a very broadly based coalition-in-the-making of parties interested in making that united public network a reality. Though not all yet realize it, the consumer, the vendor, and the legislator/regulator all are natural allies in the cause of accelerating America's progress into the information age.

The broadband network that we have described in our vision offers different values to different people. To the network provider (Bell Atlantic, et al.), it means a way to maximize usage of network resources. To the supplier of home electronics, it means a huge market for new products. To the retailer, it offers the "ultimate" store location: every customer's living room. To the advertiser, the reporter, and the entertainer, it suggests respectively the greatest media market, the largest readership, the biggest audience. To the educator, it is the limitless library; to the elected representative, it is the electronic town meeting.

To the consumer, foremost, tomorrow's public network makes "the pursuit of happiness" more inalienable a right than ever before. Not only will this network vastly increase the available selection of business, educational, entertainment, and other informational products and services, we believe that universal broadband will give consumers more sociability, privacy, flexibility, and time—as they choose.

From the marketer's perspective, the key to consumers' participation in the information age is the quality, usefulness, and affordability of the communications applications that encourage participation.

Quality, in terms of content, is in the eye of the beholder. Technically speaking, however, we believe that the level of quality is guaranteed by the exceedingly high capabilities of today's (not to mention tomorrow's) computer switches, optical fiber, high-definition imaging, and other components. Speaking as transporters, we can guarantee the top quality of any part of the network under our control; and we believe

THE ECONOMIST
JULY 23, 1988

Optical communications: Many switches make light work

Japan's NEC has the largest working optical space-division chip. It can handle eight channels. The company reckons a three-chip, 32-channel system — suitable for video-equipped offices or universities — might be on the market in "the near future."

The telecommunications companies say they will not be needing fully optical large-scale switches for 10-15 years. By then, the Japanese hope to be ready to sell them some.

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TELEPHONY
JULY 25, 1988

Singapore and Indonesia: Two faces of Asian telecommunications

Reflecting this high level of economic activity the 620 square kilometer island state of Singapore has built for itself in recent years a modern, advanced telecommunications infrastructure.

Other indicators of the sophistication of Singapore's telecommunications facilities is its fiber optic junction network, which interconnects all the country's 26 telephone exchanges, a telex system that, at seven stations per 1000 people, is one of the world's most highly developed, and a national paging network that can accommodate up to 160,000 display and tone pagers.

In the future, ST intends to play a much greater part on the international stage through the activities of its wholly owned subsidiary, Singapore Telecoms International.

In 1976, with the inauguration of the Palapa system, Indonesia became the third country in the world after the U.S. and Canada to use satellites for domestic applications. Today there are around 200 earth stations in operation, and the third generation of Palapa satellites is due to fly beginning in 1985.

that the forces of competition would drive from the market any product or service that did not measure up in terms of quality.

Usefulness, too, is subjective to some degree—just as a shovel is only "useful" if you have a reason to dig. We postulate, however, that the usefulness of a service is determined in part by its level of convenience: the degree of effort required to obtain it, and the extent to which it is available when the customer wants it. Since the network we envision offers this degree of usefulness to practically all of the services it will carry, the de facto determinant of usefulness will be the marketplace. Given the vast number of services that universal broadband makes possible (again we would refer to some of the hypothetical services described earlier here), we believe it to be a mathematical certainty that some will succeed.

Even affordability is relative. Though many services in the information age will be inexpensive for practically everyone, other seemingly expensive services will become "essentials" whose value is unquestioned even if most purchasers feel compelled to price-shop extensively. Cars and TVs, to cite two examples, illustrate how a product can start as an exotic luxury and quickly become a basic commodity.

But the vast majority of information age services, we predict, will be affordable to the average household. We base this assumption, again, on the forces of the marketplace. The high level of competition, coupled with the steady downward trend in the prices of computers and other electronics, assures low prices, and people can—and will—simply stick with their old-fashioned television and stereo if the new products and services cost too much.

There is one other major criterion to consider in attempting to project consumers' acceptance of new information age services: habit. Innovators have always had to endure a period in which their new products and services were deemed "strange," "exotic," "too different," and so on.

The microwave oven, for example, was first commercialized in 1953, but did not gain wide public acceptance for about 25 years. The microcomputer, first commercialized as a consumer good by Adam Osborne in the mid-1970s, took about half that time to appear in about 20 percent of American homes. The VCR, a clumsy consumer item in the late 1970s, has taken even less time to reach 30 percent of U.S. homes.

(It is significant that in each of these three cases, the new product gained acceptance concurrently with the increasing availability of ancillary products and services: microwaveable foods, computer software, videocassettes. The emergence of universal broadband, too, we believe, will take place concurrently with the development of broadband-oriented products and services.)

We anticipate easier acceptance of information age products and services than for ovens, computers, or VCRs: not only are they apt to be far less expensive, but they will probably be less "invasive" in the sense of requiring changes in habit or custom. Indeed, the promise of many information age services is to make present-day services even more accessible and "user-friendly" than they are now.

Shared risk for shared gain

Having painted this optimistic picture of tomorrow's information service marketplace, we would still be the first to acknowledge that there is apt to be an extremely high attrition rate for new products and services—especially of the early

TELEPHONY
JULY 25, 1988

The pivotal Pacific Rim

Staged June 8-11 at Singapore's World Trade Centre, CommunicAsia was positioned at the center of a regional market with major potential.

Faithful to the show's ISDN theme, many exhibitors displayed integrated systems combining some or all of voice, data, text and video.

The Malaysian PTT, Syarikat Telecom Malaysia, gave pride of place to the customer automated services system that it developed in partnership with Bell Canada.

Other existing and future regional operators were Hong Kong Telecommunications, Asia Satellite Telecommunications Co. Ltd. and Nippon Telegraph and Telephone Corp.

On the service provider front, Europe was well represented in Singapore with major presentations from France Telecom, the Deutsche Bundespost and British Telecom. The first two used the exhibition to promote their ISDN and interactive videotex skills.

British Telecom, whose international activities moved into high gear with the establishment of an overseas division in 1986, emphasized its expertise in network consulting, planning, building, operating and maintenance. In the last two years the organization has been identifying target countries around the world and establishing an "embedded presence" in these countries.

TELEPHONY
SEPTEMBER 26, 1988

Profile: Telecommunications in South Korea

The integrated services digital network should be in place by the beginning of the next century.

Over half of the country's long-distance service is digital, and 1 million new customers joined the system last year, bringing the national total to more than 8 million subscribers.

Traffic statistics indicate Koreans are a talkative lot. Each subscriber averages 16 calls per day.

KTA is solely responsible for all telecommunications of the 24th Summer Olympics, for which 18,000 lines of telegraph and telephone terminals, 5230 channels of leased circuits, 197 TV broadcast channels, 3213 audio channels, 4660 mobile radio telephones and 200 voice mail subscriptions have been made available.

If their success at the Summer Games is any indication, Korea and KTA are ready to become leaders in Pacific Rim telecommunications.

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stages. If, for example, 100 vendors rush to market with the goal of being "first" to offer a broadband-based wake-up service, only 90 may be around a year later. The consumer will do the voting.

There is, in short, plenty of risk involved in bringing about the information age. Network providers risk building a network that goes underutilized (witness the fate of American railroads). Vendors of products and services risk failure in the marketplace. Manufacturers of support equipment risk the failure of the vendors they supply.

Though we cannot (and do not want to) eliminate the element of risk from our economy, we can draw comfort from the prospect that risk will be spread very broadly and shared by the creators and beneficiaries of the information age.

Ninety of 100 vendors of wake-up services might fail, but they will have lost little in the process because their investment costs are very low. Their costs are low because the network service they use, among other items of overhead, is low; thus, the network provider is lessening the vendor's risk.

The network provider further lowers vendors' risks simply by guaranteeing access to a vast market. Such access means that if there are any likely buyers of a vendor's product, there is an excellent chance that the vendor will find them. As with any other field of retailing, widespread acceptance of at least some new applications will defray the costs associated with all of the rest. And the more products and services are offered (even if they do not ultimately succeed), the more they, in turn, lower the cost of the network that serves them.

The principle of "shared risk for shared gain" applies even at levels of heavy investment. The manufacturer of a new "screen" (such as we have described in our vision) that displays TV, data, video phone, and other content, shares the burden of risk with subassembly contractors; content providers; the network provider(s); and any consumers who buy the product.

Facing a particular form of risk are those who, engaged today in the business of transporting information, fear the loss of their markets to a public broadband network. We cannot assure this class of a risk-free existence any more than an earlier society could have protected ground transport by banning flight. But just as aircraft assumed a role without displacing or eliminating any other particular mode of transportation, the public broadband network will take its place among the numerous other available media. The telegraph survived the telephone; radio and newspapers survived movies and TV; and movies and TV, thus far, have survived the VCR. We have, at the same time, witnessed a migration of program content—and of roles—among these various media. Universal broadband will undoubtedly bring about further migrations—without necessarily harming any medium that already exists.

The greatest risk, and one truly shared by American society as a whole, is of standing still while other nations race into the information age. We may choose between, as we noted above, a dynamic new age of economic growth in the United States, or a period of chaos, consumer frustration, lost opportunity, and increasing dependence on other nations. Choose we must: one or the other will occur. We choose the first, and we are ready and eager to do our part.

TELEPHONY
OCTOBER 24, 1988

France Telecom moves ahead

France's politics and governments may chop and change but, seemingly without missing a beat, the locomotive power of her telecommunications policies continues to speed toward the 21st century. . . . 60% of the public switching and transmission infrastructure is already digital. . . sets great store by Transpac, the world's largest X.25 packet switched data network. . .

Then, of course, there is Minitel, France's videotex service, and the integrated services digital network. At the end of 1987, France Telecom began commercial ISDN service in Brittany. Service is now being extended to Paris.

DATAMATION
NOVEMBER 1, 1988

West Germany's Bundespost Prepares for the 1990s

The Bundespost is addressing some of those concerns by developing of two of its key information networks — the Datex-P data net and its public videotex service.

The DBP now offers over 1,000 network services. To increase these, the DBP has awarded a major contract to upgrade its Datex-P packet-switching net to Siemens, which will supply its ISDN-based switch. The Bundespost is also preparing to improve its interactive videotex services and is expected to award a contract for its low-cost CEPT Tel service.

"Friendly" marketplace vs. legal battlefield

But will our hyperlitigious society permit a fair trial of the information age—i.e., in the marketplace rather than the courtroom? The telecommunications industry, which will play a pivotal role in delivering information age services, has become a major legal, legislative, and regulatory battleground. We fear for an America in which the temptation to sue outweighs the drive to compete; litigation and prohibitions cannot supplant the marketplace as drivers of our economy.

We are not alone in believing so. "In our view, the procedures resulting from the MFJ are now operating to the detriment rather than the benefit of vital U.S. interests."

So wrote Hon. John Dingell, chairman of the House committee on energy and commerce, and Hon. Edward Markey, chairman of the House subcommittee on telecommunications and finance, in a letter (Feb. 6, 1989) to U.S. Attorney General Richard Thornburgh. They wrote to criticize the extensive delays suffered by Pacific Telesis in seeking waivers from the Department of Justice and U.S. District Judge Harold Greene that would permit the company to invest in an off-shore cable system.

The collapse of the transaction, if brought about by the delays, the Congressmen wrote, "would be damaging to our national interests, an embarrassment for the United States, and totally unnecessary."

> *We are now saddled with procedures that require the Justice Department to consume a tremendous amount of time, money, and scarce resources making evaluations and recommendations (that) in many cases are well outside your expected area of expertise. In addition, the final decision on many questions of major commercial and public policy significance now rests in the hands of the federal judiciary, which was not elected by the people of this country and is not subject to the Administration Procedures Act or other comparable standard of accountability.*
>
> *This situation must be corrected....*
>
> *(W)e hope to work together with you and your staff in developing new legislation and regulations (that) will accommodate legitimate anti-trust concerns without undermining or damaging our national interests in other fields. Public policy should be adopted by the Congress and implemented by the Administration; detailed regulation of the telecommunications industry should be the responsibility of the Federal Communications Commission, not of the Courts. It is time that we restore the correct balance to our government functions in the telecommunications field, and we look forward to the Department's cooperation in that effort.*

We agree with Messrs. Dingell and Markey in word and spirit; we would apply their message not only to the MFJ, but wherever our legal system has come to place unnecessary restraints and shackles on the industry.

In the interest of sooner bringing about the information age, we call for a "friendly marketplace": one that fosters thriving competition without sacrificing our common interest in a vital American economy. We call for a spirit of

TELEPHONY
NOVEMBER 7, 1988

U.S. videotex gets window into French kiosks. . .

Minitel Services Co. has arranged for PC and Minitel terminal users on its network to access French kiosk-based information services, without paying subscription fees.

Although a good entrance into the U.S. market, MSC President Joseph Mazzeo said MinitelNet's subscription process created too many barriers to accessing the French information services. The pre-subscription fees, Mazzeo said, deterred "right-now American users" from using the network.

MSC customers will be able to access the French kiosk services by picking up the phone and providing a credit card number....

Eventually, MinitelNet will encompass all of the approximately 9000 kiosk services available in France, Mazzeo said.

TELEPHONY
NOVEMBER 21, 1988

France launches nationwide ISDN

France Telecom will hold a press conference later this month in Paris to announce the beginning of a nationwide rollout of its integrated services digital network technology.

The French telephone company will also announce the connection of its first fully commercial ISDN users in Paris, ahead of the original 1990 commercial service schedule.

By 1990, most of the country will have access to France Telecom's ISDN service.

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cooperation by the members of the information industry and others in agreeing to the technical standards a universal broadband network requires. We urge all to participate—and we urge all participants to consider litigation as a last, not a first, resort. When used to excess, the legal weapon backfires on us all. We urge faith and confidence in the belief that our free enterprise system is the remedy of choice.

II. Technological Components For Delivering The Vision

We see four general categories in which developmental progress of a technical nature is necessary in order to make available to consumers the kinds and range of choices described in our vision:

- Introduction (perhaps in stages) of equipment such as video displays, audio components, sensors, and processors into the consumer's homes and places of business.
- Adapting by current information providers of their operations to the more sophisticated choices that will benefit the user and keep pace with the consumer's expectations. Providers may have to "computerize," "go live," "go video," etc.
- Digestion and coordination, through equipment makers, network suppliers, information sources, and consumers themselves, of the scope and detail of customer controls that make the vision appealing and adaptive to consumer needs.
- Overhaul of the communications networks that deliver and care for information on the way from its source to the customer to accomodate the technical characteristics of the communications applications.

The infrastructural mechanism that we believe can best deliver the level of information age services we have described here will be the product of a cooperative effort among various industries, including information content and service providers, equipment manufacturers, and transport companies. (Please see Figure 3.)

The product and service providers include emergency services, retailers, entertainment providers, broadcasters, cable TV operators, educators, news and information outlets, and utilities. These providers all have traditional roles in our society and are assumed to continue their present relationships with the consumer, but at decreased cost, and often with results more satisfactory to the consumer. In our vision, there is competition among the providers, with each vying for the consumer's attention and loyalty. There are no barriers to entry. Providers with new or innovative ideas can survive based on the merits of the product rather than upon legally favored status or other artificial advantages.

Consumers have access to any of the services offered by these providers. Consumers have all of today's voice communications—augmented by multi-way video, data, and new applications of voice services. Consumers also have far more extensive control over communications among themselves, and with more providers than ever before, consumers can all the more "shop around" among competing vendors.

The delivery channel through which seller meets buyer is the

TELEPHONY
DECEMBER 5, 1988

New force emerges on European scene

Austrian Telecommunications Co., a joint venture between the Austrian electronics companies Kapsch and Schrack, is the latest European company to emerge as an exporter of digital public switching equipment. The company has agreed to supply 100,000 telephone lines of digital switching capacity to Hungary.

public network—which performs its traditional role of linking all citizens but has evolved to include video, data, and telemetry communications for all. The public network maintains its traditional relationships with the providers as well, treating all fairly and without discrimination. Prices for basic services—voice, data, and video—are regulated to be affordable. Some services described in our vision can be provided today over copper; but fiber further offers the opportunity to share facilities—making more services affordable to more people, and sharing the cost in the process.

Bell Atlantic began aggressively placing fiber in its network in the late 1970s. Currently over 90 percent of our interoffice links have optical fiber facilities in operation. Over 50 percent of our wire centers have fiber in the loop portion of the network. Bell Atlantic is continuing to place fiber at the rate of 70,000 miles per year, from a base of 315,000 miles at the end of 1988.

The distribution portion of the network from the remote terminal site to the residence is the last challenge in creating a truly all-fiber network. Plans for fiber to the home (FTTH) deployment are under study. There is industry consensus that fiber will surpass copper as the most economical way to provide plain old telephone service (POTS) some time in the 1992 to 1996 timeframe. The economic cross-over year will occur earlier if the local exchange companies are allowed to obtain additional revenues from transporting and supplying the various broadband services that fiber, but not copper, can support.

Bell Atlantic, in cooperation with Helicon Cablevision, led the country with its FTTH technology trial in Perryopolis, Pa., by providing POTS and CATV video over a single fiber to each residence. A second FTTH technology trial for POTS-only service is under way in South Brunswick, N.J. These trials demonstrate our ability to offer broadband services, including video, to residential customers.

We think FTTH will emerge in three phases.

The first phase of deployment of FTTH will place one fiber to each home, fed by a voice/data module similar to those deployed today. A separate CATV switch module will be placed in those remote terminal sites where CATV transport is desired. The CATV switch will have access to a selection of CATV packagers and to the full set of channels provided by each, but will deliver to the home up to four active channels chosen by the customer at one time. Another video switch module will be co-located to serve those customers who want access to video-on-demand providers. The fiber will easily accomodate multiple voice "lines" and telemetry at the same time as video services.

Since video codecs (coder-decoders) are still costly, the video signals will be transported using analog technology, with voice/data being digitally encoded on analog carriers.

The second phase of FTTH deployment will allow transport of the entire CATV channel set simultaneously to the home, eliminating the need for a CATV switch. This will occur as the price for linear lasers becomes economical on a per-subscriber basis. Analog transmission will continue for all signals. High definition TV (HDTV) will be available through this network to those who have HDTV sets.

The third phase of FTTH will start when digital codecs are cheap enough to deploy on a per-subscriber basis. This will allow the total integration of all video, data, and voice signals into one common piece of equipment at the remote terminal site. A single

THE ECONOMIST
DECEMBER 17, 1988

Mr. Nokia's bequest

One of the surprises in European business in the 1980s has been the emergence of Finland as a competitive force in European electronics. The vehicle has been Nokia: a conglomerate best known until the beginning of this decade as a manufacturer of tissues, but now Europe's leading producer of mobile telephones and its third largest producer of television sets.

THE ECONOMIST/
DECEMBER 17, 1988

Telecommunications: Ma Bell's new challenger?

Siemens has found alliances in Britain and America to help build up its market share. At the end of last month it teamed up with a British electrics group, GEC, to bid £1.7 billion ($3.1 billion) for GEC's British rival, Plessey. Under the plan, Siemens would gain 40% of GPT (the telecom's equipment maker formed jointly by GEC and Plessey in 1987). And, on December 13th Siemens announced that it was buying half of the sales part of IBM's loss-making telecoms arm, Rolm, and all of the manufacturing part.

The new deal will make Siemens the world's largest supplier of PBXs (private telephone exchanges), which account for about 8% of world telecoms sales, says TRC, another consultancy.

Even with GPT's share of the large-exchange market Siemens will probably want more. Another merger, say with Italtel, would suit Siemens. Were that to happen, Siemens, world number two with Plessey and Rolm aboard, would be breathing down AT&T's neck.

THE ECONOMIST
DECEMBER 24 1988

Mobile telephones off line

More people now use a mobile telephone in Britain than in any other country in Europe: nearly 450,000, a third of them signed up within the past year. These numbers have so exceeded expectations that the government is now thinking of allowing a third network.

That might dovetail nicely with the start of the new pan-European cellular-radio service in 1991, which will allow telephone owners to use the same telephone in Paris or in London.

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digital high-speed stream of 600 million to 1.2 billion bits per second will be delivered to each home, carrying 12 to 24 simultaneous digital video channels, plus voice and data. Digital video will noticeably improve the quality of the received signals and will allow consumers to perform video imaging applications and video windowing on their TVs. Digital video services will be deployed to provide access to video-on-demand service providers. Digital TVs will be available, beginning the elimination of digital codecs in the home. HDTV sets will be commonplace in homes.

Optical fiber will soon be cheaper than copper for connecting newly built homes to the network. That is good news; however, the rate at which all American homes convert to fiber is only a few percentage points a year. At current replacement rates, the conversion will take about 30 years—placing American consumers at least a generation behind their Japanese, English, French, and other foreign counterparts.

Deploying the infrastructure required to deliver our vision is not, per se, a difficult technical challenge for our nation. Advances already partially deployed in Bell Atlantic's public network have laid the foundation for the broadband vision to be technically feasible in the next 10 to 20 years.

The technology exists today, and the blueprints for tomorrow's network are on the shelf; what we await is the impetus in the form of applications development, economic incentives, and relief from excess regulation and litigation.

The outcome—in the form of a universal broadband network—will be a "democratized" access to the promise of the information age: a generally available medium that can serve virtually all vendors and all consumers.

TELEPHONY
DECEMBER 26, 1988

Turkey heads into the next decade with a 21st century telecom system

The PTT, backed by the government, has pursued a number of innovative strategies. So as not to become a burden on the country's balance of trade account, the PTT has encouraged the growth of local manufacturing, has negotiated special financing deals and is turning to private capital and resources to facilitate the rapid introduction of new services. . . .

One spinoff has been the beginning of an export market for Turkish-made telecommunications hardware. Netas numbers Cyprus, Pakistan, Saudi Arabia, Egypt, Libya, Nigeria, Morocco, Kuwait and the Yemen Arab Republic among its overseas customers. . . .

An integrated services digital network pilot also is planned for 1989. . . . If it is successful . . . ISDN will be available throughout Turkey, starting with Ankara and Istanbul. . . signaling system No. 7 will be introduced into local exchanges in 1989.

FIGURES

Figure 1

Figure 1 shows communications applications that are available to consumers today.

This chart probably overstates what is "available," because many of the options are unknown or unaffordable to most consumers, even though they are available somewhere in the U.S.

FM sideband and vertical blanking interval (VBI) are used for delivering stock ticker information, among other applications, but not more than a handful of consumers use them today. Electronic mail has become widespread among commercial users, but not so for the majority of residential customers.

Figure 1

Examples of Today's Communications Applications "Available" to Residential Customers

	REAL TIME		DELAYED	
	Directionality		Directionality	
	One Way	Two Way	One Way	Two Way
Data	FM sideband VBI data Paging	Meter read & control Security systems Videotex	PC file transfer	PC file transfer
Text	Fax Teletex	Fax	Fax Email	Fax
Audio	Broadcast radio	Telephone CB radio Cellular phone Voice messaging	Broadcast radio Audio cassettes	
Video	TV bulletin Some TV (news/talk) CSPAN	Stillframe phones	Most TV programs VCRs	

Figure 2

Figure 2 shows some of the communications applications that we expect will become widely available as a result of the deployment of the broadband public network. We foresee active involvement by merchants, government agencies, news organizations, movie makers, TV stations, cable TV operators, the medical profession, bankers, and many others, once the broadband distribution channel has been established or is expected with a degree of certainty.

The applications listed are noteworthy in the variety of additional benefits and the amount of user-selected control they offer consumers.

The controls expected include the following:

- Conversion from one form of communications to another. This could be as simple as enabling a videophone-equipped user to "talk" through it to a voice phone-equipped user. It could be as complex as converting spoken language to "text."

- Storage of any communication, either for archival purposes or to allow study at a later date would be available to any user. This might be as simple a control as voice messaging, or as complex as storing a copy of a video talk with a distant relative.

- Non-threatening input devices such as inexpensive touch screens, voice response/activated equipment, and medical telemetry. Inputs may be as simple as a voice-activated replacement for the TV's remote controller, or as complex as a voice processor that deciphers oral instructions on security, energy management, and how to answer attempted communications from different types of callers. Medical telemetry "bracelets" could improve the monitoring and costs associated with medical care.

- The ability to "stop" a program, resume it at one's convenience, prioritize incoming communications (accepting some, screening out others), schedule personal reminders into whatever communications medium is being used (e.g., TV), etc.

Figure 2

Communications Applications Expected To Be Widely Available and Affordable to Residential Consumers, as a Result of the Broadband Public Network

	REAL TIME		DELAYED	
	Directionality		Directionality	
	One Way	**Two Way**	**One Way**	**Two Way**
Data	Telemetry: medical appliance circuit control energy management	Home security Agricultural telemetry Teleworking	Private archives	Private archives
Text	Traffic & weather reports	Teleworking Retailing/ shopping: grocery banking dry goods Personal schedule & reminders	Personal archives Text mail	Personal archives Polling
Audio	Music jukebox Remote stations		Personal archives Time-shifted concerts general programming	Personal archives
Video	Custom news Distant TV stations Live entertainment education Retailing	Teleworking Videophone Medical emergency Social services Education: system tutoring Video group conferencing Home & property security	Time-shifted TV & events & movies Video catalogs Private archives	Video mail Private archives

Figure 3

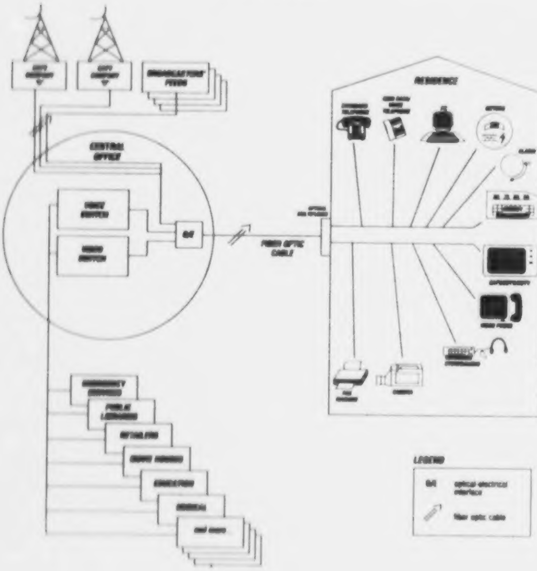
The logical "wiring diagram" between consumers and the industry suppliers in the information age of our vision is shown in Figure 3.

The product and service providers, such as emergency services, retailers, entertainment providers, broadcasters, cable TV operators, educators, news and information outlets, and utilities are shown on the left side of the diagram.

Consumers, represented by the "house" at right, have access to any of the services offered by these providers.

The delivery channel through which the consumer reaches the providers is the public network.

Figure 3
Vision Network


CENTRAL OFFICE
VOICE SWITCH
VIDEO SWITCH
O/E
FIBER OPTIC CABLE
RESIDENCE
EMERGENCY SERVICES
PUBLIC LIBRARIES
RETAILERS
EDUCATION
LEGEND
O/E optical electrical interface
fiber optic cable

Mr. Collins. As an advanced telecommunications infrastructure will bring improved quality of living to rural America, like anything else, there are some obstacles. One real obstacle is cost. Replacing 52 million miles of wire in our networks today with fiber could cost over $200 billion. REA borrower telephone companies must have continuing sources of financing if they are to participate in this upgrading of their facilities. The REA telephone program is essential in order for all rural areas to participate in the information age.

A second obstacle, and one that is very important, is political in nature. USTA member companies, both large and small, are eager to continue to update the telecommunications network and to bring the information age to rural America. However, we are continually frustrated from doing so. Governing our activities are the U.S. Congress, the FEC, States, public utility commissions, and for the Bell operating companies,the Department of Justice, and, of course, U.S. District Court Judge Greene.

Not only are we singularly regulated, but in instances regulators disagree among themselves. Let me give you an example of what happens in the Bell Atlantic region, which affects the rural parts of our country:

Last June, the U.S. court issued a final order authorizing the RBOC's to provide the information gateway service. It allows us to rely on a centralized computer system. Bell Atlantic in installing two trials, sought in one of them court approval to provide the gateway services throughout the State of Pennsylvania using one centralized computer. The centralized computer would have been accessed from all the other areas in the State over long distance lines purchased by Bell Atlantic from long distance carriers.

The court said Bell Atlantic could not use that efficient arrangement. Instead, based on the court's decision, Bell Atlantic would have to install a gateway computer in each of its five local service areas in Pennsylvania. The result, Mr. Chairman, of their decision is that we are limiting the gateway at this time to the Philadelphia region and we are not reaching out to the other parts of Pennsylvania.

In other related regulatory areas I would like to mention that rate based regulation dampens our incentive to aggressively invest in our network to the extent we could. The MFJ restrictions on the Bell companies manufacturing and the generation of information content limit development of new services.

The Cable Act of 1984 inhibits the telephone companies from putting into use the a tremendous power of the optical fiber networks. I would like to pause and thank you for cosponsoring the cable legislation.

Even if all those restrictions are not removed, the telephone companies are going to deploy fiber and digital switching over time. It would be fair to estimate that under a scenario with respect that the restrictions remain, it will take up to 30 years to complete that transition. If we act now to provide the incentives to our private telecommunications companies, the infrastructure for the 21st century will begin to be built in the 20th century.

It is this infrastructure which will bring to rural America the state-of-the-art telecommunications services for its residents, businesses, hospitals, and schools, and drive the cost down so those services will be attractive there. When there is a coherent common policy and removal of restrictions, the information age will be delivered to rural as well as urban consumers.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Collins follows:]

TELECOMMUNICATIONS ISSUES AFFECTING RURAL AMERICA

TESTIMONY OF A. GRAY COLLINS, JR.
SENIOR VICE PRESIDENT, EXTERNAL AFFAIRS
BELL ATLANTIC CORPORATION
ON BEHALF OF THE
UNITED STATES TELEPHONE ASSOCIATION

BEFORE THE

SUBCOMMITTEE ON GOVERNMENT INFORMATION,
JUSTICE AND AGRICULTURE
OF THE HOUSE GOVERNMENT OPERATIONS COMMITTEE

JUNE 14, 1989

STATEMENT OF A.GRAY COLLINS, JR.

JUNE 14,1989

Good afternoon Mr. Chairman and Subcommittee Members. My name is Gray Collins, senior vice president - external affairs for Bell Atlantic. I am testifying today on behalf of the United States Telephone Association which has a membership of approximately 1,100 local exchange carriers.

I wish to thank the Subcommittee for allowing me to appear this afternoon and address an important concern of the telephone industry -- "Bringing the Information Age to Rural America."

There is no question that the United States is moving rapidly into the "information age." Experts predict that by the year 2000, two thirds of the American workforce will be employed in some form of information services. The problem facing rural America is an undeveloped telecommunications infrastructure, which is required for full participation in the information age. Many rural communities do not have essential private lines, touchtone phones or digital switching yet.

Therefore, the proper telecommunications infrastructure must be built which will link every home and business in the United States. Such an infrastructure which is universally available on a simple, dial-up basis to all Americans remains vital to eliminating a society of "information haves" and those who are "information have-nots." An advanced telecommunications infrastructure is as important today to rural America's future as electricity, railway and highway systems have been in the past.

My testimony this afternoon will focus on two important telephone industry matters affecting rural America. First, the importance of the telephone companies developing a telecommunications infrastructure and, second, the obstacles we face in developing such an infrastructure -- an electronic highway -- if such an infrastructure is to become reality in the United States.

Telecommunications infrastructure should be thought of as our communications highway system. In their Telecom 2000 Report, the National Telecommunications and Information Administration said that: "telecommunications is the electronic tie which can more closely bind our nation of communities together into an electronic 'national neighborhood'." The report also declares that telecommunications affords individuals expanded access to information, offers individuals greater freedom, more social and economic power, and enriches the overall quality of our national life. I believe those are goals we all want to achieve.

Analogies exist between our modern telecommunications infrastructure and the transportation systems of the industrial age, from railroads and canals to our interstate highway system. Therefore, a superior telecommunications infrastructure must be deployed to deliver the full benefits of the information age.

Last August, the National Governors Association unanimously adopted a policy on telecommunications, which in part said: "the ability to transmit and process information is essential to improving economic productivity and growth, and is playing an increasing role in the delivery of education, health care, and other essential social services. This ability, in turn, depends on the capabilities, quality, and cost of our national telecommunications infrastructure."

Our telephone infrastructure today consists of -- copper wire, switching equipment, radio transmitters, and satellite dishes. The infrastructure of tomorrow must consist of an optical fiber-based broadband switched network that will link every home and business in the United States and serve as America's "superhighway system" in the information age. Such a network -- one that can transmit the combined audio, video, and digital signals on which information age services will be based -- is the infrastructure foundation of our future. In rural areas, telephone companies are the only viable entities who can deliver this to all of the public. Few others seek to offer service there. It is not economic to pursue duplicate advanced networks in rural areas. The result is that we as telephone companies need your support and encouragement to secure the public interest in rural telecommunications.

Why is such an infrastructure important to rural America? Let's turn to West Virginia -- a state in Bell Atlantic's territory.

C&P of West Virginia's telecommunications infrastructure is among the best in the world. It has the highest digital switch penetration in Bell Atlantic. Between its major cities, high-capacity state-of-the-art services are available through optical fiber circuits. C&P of West Virginia has one of the highest digital trunking rates in the nation. We have done this much in the face of significant obstacles. Just think what could be achieved with active governmental support!

Because we have a modern network in West Virginia, we put a new operator services facility there to serve clients from the Atlantic Ocean to the Appalachians. We provided a bank with public packet switching service. We gave a statewide department store chain a modern digital network for video conferencing and credit verification. In fact a Philadelphia research organization relocated a major operation to Charleston partly because we had the network to support its polling and survey business over much of the east coast.

As our society becomes more information-oriented, those communities that have fully modern telecommunications networks will best be able to compete for business and jobs -- wherever they are. There is no question that a sufficient level of interconnected telecommunications services will make our geographical barriers transparent.

Telecommunications offers unique opportunities for rural areas. Businesses are starting to look to rural America as a place to locate new operations, and to relocate old ones, especially when computer and other new technology makes it easy to link distant sites. Without advanced telecommunications systems, however, these businesses would not have the necessary technology to tie these sites together to accommodate their needs. As rural telecommunications becomes more efficient and offers more, the businesses that depend on the network become more efficient and offer more as well.

Companies which have taken advantage of small communities' advanced telecommunications capabilities include Citicorp, which moved its credit card operation to Sioux Falls, South Dakota; Rosenbluth Travel, Inc., one of the largest travel agencies in the country, which moved its computer reservations system to Linton, North Dakota; and American Home Shield, which opened an office in Carroll, Iowa, to handle customer calls from 38 states.

As an economist from the University of Missouri points out; "There's absolutely no reason why a lot of these companies can't operate in a rural area just as easily as they can in Los Angeles or New York City."

I would like to cite the recently released study by the Ford Foundation and the Aspen Institute title "Rural America in the Information Age." According to the study, a modernized telecommunications network in rural America could provide a means to attract national and international business and related job opportunities. The report suggests that the economic blight in many rural communities could be relieved by attracting new business opportunities linked by advanced telecommunications systems.

Besides new business opportunities and new jobs which an infrastructure would provide, rural Americans would benefit in other ways. Let's take education. Students in relatively isolated areas could enjoy the benefits of a fuller range of courses by telecommunications and be exposed to stimulating new ideas and teachers that would not have been available if their physical presence had been required. Communications can make a significant difference in disseminating knowledge.

For example, US West Communications is working with the school district in Moffat County, Colorado to explore technological options available for providing two-way interactive television links with five schools separated by distances up to 120 miles. Panhandle Telephone Cooperative in Guymon, Oklahoma has developed a fiber optic network which connects schools across the Panhandle via two-way interactive television system.

Enhanced medical services and home health monitoring are already being delivered to rural areas over advanced telecommunications network systems. Such systems have been proven not only more convenient, but have provided a higher level of care by allowing doctors to make what amounts to be telephone-aided house calls.

Simply put, the proper telecommunications infrastructure will bring to rural America both opportunities and important information services. That's the good news. Unfortunately, there is the bad news -- there are still both real and unnecessary obstacles standing in our way of building the "electronic superhighway."

One real obstacle is cost. Replacing the estimated 52 million miles of copper cable that currently serve American homes would cost billions. The entire overhaul of the public network, including the installation of fiber, could cost over $200 billion according to some estimates. Duplicative networks for rural telecommunications are not an efficient option. REA borrower telephone companies must have a continuing source of financing if they are to upgrade their facilities. The REA telephone program is essential in order for all rural areas to participate in the information age.

However, the second obstacle -- the chief obstacle -- is not economic, it is political in nature.

USTA member companies large and small are eager to continue to update the telecommunications network with emerging technology and to bring the information age to rural America. However, we are continually frustrated from doing so. Governing our activities are the U.S. Congress, the FCC, the states, and for the Bell operating companies, both the Department of Justice, and, of course, U.S. District Court Judge Greene. Not only are we singularly regulated -- but our regulators often disagree among themselves. The result is gridlock. Let me give you an example of something that has happened in the Bell Atlantic region.

One year ago, last June, the U.S. District Court issued a final order authorizing the RBOCs to provide gateway services. Gateway services allow customers to reach a variety of computer databases and services by dialing a local telephone number.

Bell Atlantic viewed this change as a positive development and has deployed two gateways. But Bell Atlantic efforts to develop one of the gateways are being impeded by the court's interpretation of the decree's long distance restriction.

Gateway service relies on a sophisticated computer system accessed via the existing telephone network. Bell Atlantic sought court approval to provide gateway services throughout the state of Pennsylvania using one centralized computer. The computer connects the customer to the gateway menu -- and then sets up a separate call between the customer and the information database using the carrier selected by the information provider to handle the call. The centralized computer would have been accessed from each of the areas of the state, including rural areas, over long distance lines purchased by Bell Atlantic from a long distance carrier. The kind of centralized functions performed by the computer are common in the local telephone business.

The decree court, however, said that Bell Atlantic could not use this efficient arrangement. Instead, under the court's decision, customers throughout Pennsylvania could reach the gateway by making a local call only if Bell Atlantic installed a separate gateway computer in each of the five local service areas in Pennsylvania. The court recognized that Bell Atlantic is permitted to use efficient, centralized arrangements for traditional local telephone services, but nevertheless held that the same could not be done for new services. It felt that efficient low-cost operations for consumers provided an insufficient justification to permit a statewide gateway.

America needs to forge from the many differing viewpoints a single national telecommunications vision and policy. What we, the USTA, ask of the public sector is the freedom to build the network -- the removal of unnecessary and counterproductive laws, rules and regulations that take away our incentive to forge ahead.

I also refer to the rate-based regulation that dampens our incentive to invest further in our network. I refer to the MFJ restrictions on Bell company manufacturing and generation of information content. And I refer to specific laws, notably the Cable Act of 1984 -- that prohibit telephone companies from putting to use the tremendous power that optical fiber clearly possesses. These restrictions hold the consumer back too.

Even if restrictions are not removed, telephone companies will install fiber and broadband switching over time. However, it would be fair to estimate under that scenario it will take 30 years or more to complete the transition. But that is too, late if our national economy is to remain competitive in world markets.

But if we act now, as I believe we must, to provide incentives to our private telecommunications companies, the common carrier system of the 21st century will begin to be built in the 20th century. After all, the public switched network is our nation's most vital infrastructure. It is this same infrastructure which will bring to rural America the state-of-the-art telecommunications services for its residents, businesses, hospitals, and schools.

Bell Atlantic recently completed a study entitled: "Delivering the Promise: A Vision of Tomorrow's Communications Consumer." The study describes a new generation of communications services that may become available in the next 10 to 20 years. Mr. Chairman I ask that this study be incorporated into the record -- for it will give your Subcommittee a vision into the information age.

[Information ~~retained in subcommittee files~~ available through Subcommittee]

Finally, whatever our perspective, whatever our own particular interest in this issue, let us remember: the world is moving rapidly and inevitably into an "information age" and a global communications continuum. The new age is ours to lead or to follow. Let us be the leaders traveling down the superhighway of communications -- not a follower. When there is a coherent common policy for the nation in place, the information age will be delivered to rural as well as urban consumers.

This concludes my oral testimony and I will be happy to answer any questions the panel may have.

Mr. **Wise**. Our next witness will be Margaret Goatcher, president, Cimarron Telephone Co., and representing the Organization for the Protection and Advancement of Small Telephone Companies.

STATEMENT OF MARGARET GOATCHER, PRESIDENT, CIMARRON TELEPHONE CO., REPRESENTING THE ORGANIZATION FOR THE PROTECTION AND ADVANCEMENT OF SMALL TELEPHONE COMPANIES

Ms. **Goatcher**. Good afternoon, Mr. Chairman, and members of the subcommittee. I deem it a pleasure to appear before you today on behalf of rural development.

I am Margaret Goatcher, president of Cimarron Telephone Co. in Mannford, OK, and also first vice president of OPASTCO, the Organization for the Protection and Advancement of Small Telephone Companies.

OPASTCO is a national association representing more than 400 telephone companies and cooperatives that serve less than 50,000 customers. Collectively our members provide telephone service to approximately 1.5 million subscribers in 39 States in rural America.

Mr. Chairman, OPASTCO supports rural development for the communities our members serve and for communities throughout the Nation. In fact, OPASTCO recognized this in a very specific way in January of this year. OPASTCO established a foundation—the fund for rural education and development, or FRED. The principal activity of FRED is sponsoring programs related to the technological, social, and economic conditions of rural areas.

It is important that all parts of our country, including rural areas, have the infrastructure necessary for the United States to compete in world markets. To increase the potential for rural development, we must look to other segments of our economy, such as the provision of information goods and services. A state-of-the-art telecommunications infrastructure is essential if rural businesses are to effectively compete not only in national markets, but in world markets. OPASTCO is key to future development.

OPASTCO members were very interested in rural development and recognize the need for appropriate actions by the Federal Government and by State governments. Indeed, the Federal Government already has in place a most effective rural development program for the telecommunications infrastructure—the Rural Electrification Administration. We call your attention to our written testimony, which states the accomplishments of REA in the past, since its inception in 1949, and the rural telephone bank in 1971.

But REA in recent years has backed away from its traditional role of promoting the up to date telecommunications infrastructure so necessary for rural development, and OPASTCO believes that REA needs to reverse its current philosophy. Specifically, REA should be directed to accomplish the following to assure state-of-the-art telecommunications for rural areas:

Reestablish the policy of promoting the latest technology for rural areas by directing the REA to promote innovations and applications to speed the delivery of information services to rural areas.

To reverse restrictive REA policies on eligibility for loans. Promote full use of loan authority.

Provide funding for all act purposes including headquarters buildings, computers, vehicles, work equipment, and particularly capabilities such as signaling system 7 and equal access.

My company, Cimarron Telephone Co., currently has 6,400 access lines serving ten exchanges in northeastern Oklahoma. I can honestly say that without REA financing and technical assistance, our company could not have achieved the level of facilities and service quality we have today. But I emphasize that REA's job is not finished. To bring the information age to rural America—including fiber optics, advanced signaling networks, telephone companies servicing rural areas must continue to receive REA funds and technical assistance.

In addition to REA funding and technical assistance, two other Federal policies have promoted state-of-the-art telecommunications in rural areas. Realizing maintaining these policies are FCC policies and this committee has FCC oversight jurisdiction, we encourage you to consider the following in the promotion of rural development:

First, pricing of communications services to and from rural areas should remain the same as pricing for the same services in urban areas. Average pricing of interstate toll rates is a past and current FCC policy.

Second, a settlements system that permits rural companies to recover their higher cost of doing business through pooling remains essential. The FCC has implemented a universal service fund for higher cost small companies to accomplish this need.

The continuation of nationwide rate averaging and the universal service fund, along with the future viability of REA, are key elements in not only the maintenance of universal telephone service, but also in the promotion of universal information service, which is imperative for rural development.

For future information services OPASTCO believes that a nationwide fiber optic network is essential. Many small telephone companies already have installed fiber for interoffice connectivity, trunking, and other applications and several of our members already are involved in using two way interactive television over fiber facilities to enhance curriculum offerings in local schools.

Two way interactive television permits the teacher and the students at remote locations to truly interact as if they were in the same classroom. For this application, fiber technology is superior to other technology.

Several components are necessary to attain this fiber network and the resulting rural development benefits: financing of the actual delivery facilities, the opportunity to offer the services necessary to make the system viable, and having sufficient pricing and revenues to support the system and services. To realize these components, OPASTCO recommends the following:

The REA must be in the forefront of financing development of fiber technology.

The FCC must continue its policies of toll rate averaging, pooling for small companies, and universal service.

The Congress should permit telephone companies the opportunity to provide entertainment television, particularly in rural areas where offering entertainment TV service via the same system can provide revenues to help pay for fiber to the home.

Any legislation related to telecommunications in rural areas should not specify technology, because technology changes.

One of the key questions that we ask ourselves is whether small companies should invest in new facilities to attract new businesses or should they wait for new businesses before installing new facilities. At the very minimum, OPASTCO believes that small telephone companies need to be able to have the basic facilities, including fiber optics, and digital switching, to meet the demands of new businesses and rural development.

So that small telephone companies can accomplish this, REA needs to change its procedures and be responsive in making loans quickly to accommodate rural development. Small companies also need realistic depreciation rates to pay for older equipment. Most importantly, small companies must have the necessary revenues to pay for the investments that precede and encourage rural development.

OPASTCO has limited its comments to the telecommunications infrastructure of rural development. However, our members stand ready to participate in all areas of development. In fact, small telephone companies are ready now to provide state-of-the-art services such as interactive television, transmission of data for medical care, facsimile transmission, and many others. Our networks currently are underutilized in many ways and we can accommodate much development using the facilities we now have in place.

Mr. Chairman, we have given you specific proposals for the telecommunications infrastructure in rural areas:

The REA telephone program should be returned to its traditional role of actively promoting up to date telecommunications infrastructure.

Federal policies on average toll rates and a universal service fund should be continued.

The elements such as depreciation rates and provision of entertainment television should be addressed so as to provide the necessary components for the network of the future.

Also, in addition to being common carriers, OPASTCO members are most interested in providing the necessary technical expertise and the necessary services to promote rural development in all areas, including education, health, and other businesses.

We believe that the cost of our proposals is very little. Other than policy actions, our proposals would require only a modest increase for additional REA staff. The current appropriations for loan levels should meet the needs of REA telephone borrowers, and we also emphasize that REA loans are paid back by the borrowers.

Mr. Chairman, we look forward to continuing to work with you on rural development.

Thank you.

Mr. Wise. Thank you.

[The prepared statement of Ms. Goatcher follows:]

Statement of
Margaret Goatcher
President, Cimarron Telephone Company
First Vice President, Organization for the Protection and
Advancement of Small Telephone Companies
before the
House Committee on Government Operations
Subcommittee on Government Information, Justice and Agriculture

June 14, 1989

Good morning Mr. Chairman and members of the subcommittee. I appreciate this opportunity to appear before you to discuss rural development.

I am Margaret Goatcher, president of Cimarron Telephone Company in Mannford, Oklahoma, and also First Vice President of OPASTCO, the Organization for the Protection and Advancement of Small Telephone Companies.

OPASTCO is a national association representing more than 400 telephone companies and cooperatives that serve less than 50,000 customers. Collectively our members provide telephone service to approximately 1.5 million subscribers in 39 states in rural America. Of our members, 70 percent are REA or RTB borrowers.

Mr. Chairman, OPASTCO supports rural development for the communities our members serve and for communities throughout the nation. In fact, OPASTCO recognized this in a very specific way in January of this year. OPASTCO established a foundation - the Fund for Rural Education and Development, or FRED. The principle activity of FRED is sponsoring programs related to the technological, social, and economic conditions of rural areas, particularly as these conditions impact telecommunications. The support to achieve FRED's educational and research oriented goals will come from volunteers and private sources.

It is important that all parts of our country, including rural areas, have the infrastructure necessary for the United States to compete in world markets. Rural development in the past occurred because of advantages in natural resources; geography, such as agricultural land; and transportation via rivers and railroads. Today these segments of our economy are not growing or even may be declining.

To increase the potential for rural development, we must look to other segments of our economy such as the provision of information goods and services. A state of the art telecommunications infrastructure is essential if rural businesses are to effectively compete not only in national markets, but in world markets. Telecommunications, particularly for tomorrow's business world, eliminates distance and geography as a handicap for rural areas.

OPASTCO believes telecommunications is the key to future development.

OPASTCO members are very interested in rural development and recognize the need for appropriate actions by the federal government and by state governments. Indeed, the federal government already has in place a most effective rural development program for the telecommunications infrastructure - the Rural Electrification Administration.

The REA telephone program was established in 1949 when REA was authorized by Congress to loan funds for telephone services, and the Rural Telephone Bank was established in 1971. Since its inception, REA has accomplished the following in communications:

- The number of individuals with telephone service in borrower service areas has increased from 36 percent in 1949 to 96 percent in 1988.
- One party service in borrower service areas has increased from 20 percent in 1961 to 93 percent.
- The REA Standards Division has promoted and established standards for innovations such as buried cable instead of open wire, and subscriber carrier equipment to increase the number of phone conversations that can be carried on a single pair of telephone wires. In addition, the REA Standards Division has created and enforced a set of standards and specifications that has insured that

rural areas, thus far, have received quality telephone service equivalent to urban areas.

But REA in recent years has backed away from its traditional role of promoting the up-to-date telecommunications infrastructure so necessary for rural development, and OPASTCO believes that REA needs to reverse its current philosophy. Specifically, REA should be directed to accomplish the following to assure state of the art telecommunications for rural areas:

- Reestablish the policy of promoting the latest technology for rural areas by directing the REA telephone program technical staff to promote innovations and applications to speed the delivery of information services to rural areas.
- Reverse restrictive REA policies on eligibility for loans contained in the Code of Federal Regulations which have the potential to force small companies out of the program.
- Promote full use of loan authority; the Administrator should lend up to the full amount authorized by Congress.
- Provide funding for all Act purposes including headquarters buildings, computers, vehicles, work equipment, and particularly capabilities such as signaling system 7 and equal access.

My company, Cimarron Telephone Company, currently has 6,400 access lines serving 10 exchanges in northeastern Oklahoma. I can honestly say that without REA financing and technical assistance, our company could not have achieved the level of facilities and service quality we have today. But I emphasize that REA's job is not finished. To bring the information age to rural America -- including fiber optics, advanced signaling networks, and the services these technologies will provide-- telephone companies serving rural areas must continue to receive and make efficient use of REA funds and technical assistance.

In addition to REA funding and technical assistance, two other federal policies have promoted state of the art telecommunications in rural areas, we encourage you to consider their importance in the promotion of rural development. OPASTCO believes that these two federal policies were essential in obtaining universal service and the present technology-rich network and are important for promoting the future information age in rural areas:

- First, pricing of communications services to and from rural areas should remain the same as pricing for the same services in urban areas. Average pricing of interstate toll rates is a past and current FCC policy.
- Second, a settlements system that permits rural companies to recover their higher cost of doing business through pooling remains essential. The FCC has

implemented a universal service fund for higher cost small companies to accomplish this need.

The continuation of nationwide rate averaging and the a universal service fund, along with the future viability of REA, are key elements in not only the maintenance of universal telephone service, but also in the promotion of universal information service, which is imperative for rural development.

For future information services OPASTCO believes that a nationwide fiber optic network is essential. Many small telephone companies already have installed fiber for interoffice connectivity, trunking, and other applications and several of our members already are involved in using two-way interactive television over fiber facilities to enhance curriculum offerings in local schools. Two-way interactive television permits the teacher and the students at remote locations to truly interact as if they were in the same classroom. For this application, fiber technology is superior to satellite technology because the characteristics of satellite favor one-way transmission.

Despite the progress by small companies in installing fiber for trunking applications, fiber to the home is being used only on an experimental basis, even in urban areas. But getting fiber to the homes in rural areas as well as urban areas is key to the future information age. This is truly the next generation for telecommunications.

Several components are necessary to attain this fiber network and the resulting rural development benefits: financing of the actual delivery facilities, the opportunity to offer the services necessary to make the system viable, and having sufficient pricing and revenues to support the system and services. To realize these components, OPASTCO recommends the following:

- The REA must be in the forefront of financing fiber in rural areas and promote development of new technology specifically for rural areas.
- The FCC must continue its policies of toll rate averaging, pooling for small companies, and universal service.
- The Congress should permit telephone companies the opportunity to provide entertainment television, particularly in rural areas where offering entertainment TV service via the same system can provide revenues to help pay for fiber to the home. At present, independents serving communities of less than 2,500 people are permitted by FCC rules to provide entertainment television. OPASTCO believes this definition needs to be greatly expanded to bring cable service to rural areas and enhance the prospects for innovation in combined cable and telephone services on fiber.
- Any legislation related to telecommunications in

rural areas should not specify technology because technology changes.

One of the key questions that we ask ourselves is whether small companies should invest in new facilities to attract new businesses or should they wait for new businesses before installing new facilities. It is the chicken and egg concept, but in any event, this dilemma brings up some serious questions. At the very minimum, OPASTCO believes that small telephone companies need to be able to have the basic facilities, including fiber optics and digital switching, installed and ready to be upgraded quickly to meet the demands of new businesses and rural development. So that small telephone companies can accomplish this, REA needs to change its procedures and be responsive in making loans quickly to accommodate rural development. Small companies also need realistic depreciation rates to pay for older equipment and install new technology. Most importantly, small companies must have the necessary revenues to pay for the investments that precede and encourage rural development.

Today, the federal government via REA has significantly furthered rural development through small telephone companies who now provide a modern telecommunications infrastructure for rural America. OPASTCO believes that the most efficient and cost effective method of promoting rural development is to continue this progress into the future. It would be counterproductive and costly to the federal government to duplicate small telephone company facilities by financing other common carrier type activities. Neither rural areas nor the federal government can afford duplicate efforts or facilities.

OPASTCO has limited its comments to the telecommunications infrastructure of rural development; however, our members stand ready to participate in all areas of development. In fact, small companies are ready now to provide state of the art services such as interactive television, transmission of data for medical care, facsimile transmission, and many others. Our networks currently are underutilized in many ways, and we can accommodate much development using the facilities we now have in place.

Mr. Chairman, we have given specific proposals for the telecommunications infrastructure in rural areas: the REA telephone program should be returned to its traditional role of actively promoting an up-to-date telecommunications infrastructure; federal policies on average toll rates and a universal service fund should be continued; and elements such as depreciation rates and the provision of entertainment television should be addressed so as to provide the necessary components for the network of the future. Also, in addition to being common carriers, OPASTCO members are most interested in providing the necessary technical expertise and the necessary services to promote rural development in all areas including education and health.

We believe that the cost of our proposals is very little; other than policy actions, our proposals would require only a modest increase for additional REA staff. The current appropriations for loan levels should meet the needs of REA telephone borrowers, and we also emphasize that REA loans are paid back by the borrowers.

Mr. Chairman, we look forward to continuing to work with you on rural development. Thank you.

Mr. WISE. Our final witness on this panel will be Curtis A. Sampson, speaking on behalf of the National Rural Telephone Telecom Association.

STATEMENT OF CURTIS A. SAMPSON, PRESIDENT AND CHIEF EXECUTIVE OFFICER, COMMUNICATIONS SYSTEMS, INC., REPRESENTING NATIONAL RURAL TELECOM ASSOCIATION

Mr. SAMPSON. My name is Curt Sampson. I am president and chief executive officer of the Communications Systems, Inc., in Hector, MN. Today I am appearing on behalf of the National Rural Telecom Association, a national trade association of commercial local exchange telephone companies that obtain financing under Rural Electrification Administration programs. I am also an elected commercial industry member of the Rural Telephone Bank Board.

I would like to clarify something that has been brought up regarding the REA lending program. There are three programs. One is the insured or direct loan program. Another is the guaranteed loan program. The third is the rural telephone bank. It is of interest, perhaps, that the minimum levels have never in recent years been loaned out, not because there weren't sufficient applications, but because of processing problems at the REA.

Each year there have been more dollars of applications and more loan funds authorized by Congress than what loans have been processed. So there are some processing problems, particularly apparently in the legal area, and at the secretary's level.

My company, CSI, is a small holding company that operates and owns five rural telephone companies, serving 5,400 customers in Minnesota and Wisconsin. CSI also manufactures telecommunications equipment and operates several rural cable television systems in our telephone service areas.

The five CSI areas are very rural and are primarily agricultural. Three years of dry weather have accelerated the decline of the agricultural economy in our area. Small towns continue to shrink. Towns near regional centers and recreational areas do somewhat better. But the rural economy needs all the help it can get, if wider rural recovery is to become a realistic hope.

Mr. Chairman, Dr. Parker's report shows how important it is for rural America to share in the advanced technologies and new services of the evolving information age. Communications is not our only need, of course, but good telecommunications is an absolutely necessary ingredient in any plan to revitalize the economy and improve the quality of life in our rural areas.

I am going to focus on the last, but very important goal in Dr. Parker's paper—enabling rural telephone carriers to provide the telecommunications and information services that become generally available in rural areas. Technology has been moving so fast that no one can predict all the opportunities that communications will open up for rural people.

Let me give you one example of what is already happening in Minnesota. CSI and other local small telephone companies are working together to use optical fiber technology to connect local schools in small communities with larger schools, vocational educational programs, colleges or other resources in regional centers. The rural schools can then use interactive video to offer courses they could not provide themselves. Getting optical fiber into the community this way is a first step over the threshold towards an information rich society.

Optical fiber has the capacity to carry voice, data, video, programming, and facsimile transmissions. Most larger cities and numerous inter city routes already have fiber in place. Some is being installed in rural areas, but rural areas can't afford to fall behind urban areas in communications capabilities. Businesses look carefully at the cost and range of communications in an area before choosing a location. Communications will be even more important as new services spring up.

NRTA and CSI agree with Dr. Parker that digital switching is essential for information age service. We are now working towards upgrading to digital switching for our companies in three very small Wisconsin communities and several Minnesota communities. We also plan to upgrade another Minnesota community to digital. However, because of the remaining investment in the existing equipment, we are unsure if we can feasibly provide digital capability to our other companies.

Congress should confirm universal information services and nationwide advanced network capability as national goals. NRTA heartily supports Dr. Parker's recommendation that the REA should play a central role in bringing the basic tools of the information age to rural areas. I am happy to say that REA insured loans and rural telephone bank loans are already authorized under the act for most of the improvements he recommends.

CSI has REA applications on file for loans to carry out the plans to install the digital switches I just mentioned. REA financing is also available for installing optical fiber. REA programs must continue to be the cornerstone of the rural telecommunications infrastructure as it evolves into a nationwide intelligent network.

There has been a lot of digital activity in the REA, as mentioned by our friend from West Virginia, in installing digital services. It was noted at the end of 1987, approximately 32 percent of the REA financed companies had digital service or 32 percent of the customers are served by digital. I think that same figure in the RBOC's was about 34 percent. REA and the borrowers have been keeping up. It is important they maintain that momentum.

Making the current REA and RTB programs more effective can go a long way towards including rural America in the information age. For example:

One, REA should make use of the $153.8 million in carryover funds authorized in prior years but not made available to rural telephone companies.

Two, REA should speed up its processing of loan applications to help rural areas upgrade and update their facilities.

Three, REA should be required to set loan amortization schedules in accordance with the request of the borrower, up to the full period authorized by the act, not shorter periods that undermine the effectiveness of REA programs.

Four, REA should have a more flexible dividend policy to permit REA borrowers to make more investments in rural areas.

Five, REA eligibility should not be restricted by rising interest coverage requirements for loans because that can make areas that need service improvements most not eligible for loans.

Six, REA should adopt policies that encourage borrowers to provide cellular service and provide loans for their service areas. Service by telephone companies to the large rural areas they cover is necessary to make this advanced technology widely available.

Mr. Chairman, bringing information technology and services to rural areas is important, but it won't be easy. Congress adopted the REA programs because rural areas were not getting acceptable telephone service. Most States have regulated telephone service as a public utility affected with the public interest. Telephone companies are allowed to provide service in their franchise areas without competition in return for providing universal service at reasonable rates. Both the NTIA 2000 report and Dr. Parker's report recognize that competition can be counterproductive in rural areas, where the economic base may be too small to support one firm.

The local franchise will be even more important as rural telephone systems try to modernize their service to keep pace with the information revolution. Dr. Parker is correct in pointing to the danger that competitors would cream skim the towns and leave the rural countryside unserved. NRTA believes that the States must not lose their ability to use the local franchise as the only way that has proved successful to extend service to virtually all small telephone customers.

Rural telephone companies are ready to meet the challenge of bringing modern service to their areas, if Congress will only maintain and update the strong national policies and programs that have already made high quality service a reality for so many rural Americans.

Thank you for the opportunity to appear before your subcommittee, Mr. Chairman, and for your strong interest in rural needs.

Mr. WISE. Thank you very much, Mr. Sampson.

[The prepared statement of Mr. Sampson follows:]

STATEMENT OF

CURTIS A. SAMPSON

ON BEHALF OF THE

NATIONAL RURAL TELECOM ASSOCIATION

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES

GOVERNMENT OPERATIONS

SUBCOMMITTEE ON GOVERNMENT INFORMATION,
JUSTICE, AND AGRICULTURE

JUNE 14, 1989

Good afternoon Mr. Chairman and members of the subcommittee. My name is Curtis A. Sampson and I am President and Chief Executive Officer of Communications Systems, Inc. in Hector, Minnesota. Today I am also appearing on behalf of the National Rural Telecom Association, a national trade association of commercial local exchange telephone companies that obtain financing under Rural Electrification Administration programs. I am also an elected commercial industry member of the Rural Telephone Bank Board. My company, CSI, is a small holding company that owns and operates five rural telephone companies in Minnesota and Wisconsin. CSI also manufactures telecommunications equipment and operates several rural cable television systems in our telephone service areas.

The five CSI areas are very rural and are primarily agricultural. Three years of dry weather have accelerated the decline of the agricultural economy in our area. Small towns continue to shrink. Towns near regional centers and recreational areas do somewhat better. But the rural economy needs all the help it can get, if wider rural recovery is to become a realistic hope.

Mr. Chairman, Dr. Parker's report shows how important it is for rural America to share in the advanced technologies and new services of the evolving Information Age. Communications is not our only need, of course. But good telecommunications is an absolutely necessary ingredient in any plan to revitalize the economy and improve the quality of life in our rural areas.

I'm going to focus on the last, but very important, goal in Dr. Parker's paper -- "enabling rural telephone carriers to provide the telecommunications and information services that become generally available in rural areas." Technology has been moving so fast that no one can predict all the opportunities that communications will open up for rural people. Let me give you one example of what is already happening in Minnesota. CSI and other local telephone companies are working together to use optical fiber technology to connect local schools in small communities with larger schools, vocational education programs, colleges or other resources in regional centers. The rural schools can then use interactive video to offer courses they could not provide themselves. Getting optical fiber into the community this way is a first step over the threshold towards an information-rich society.

Optical fiber has the capacity to carry voice, data, video programming and facsimile transmissions at the same time. Most larger cities and numerous intercity routes already have fiber in place. Some is being installed in rural areas. But rural areas can't afford to fall behind urban areas in communications capabilities. Businesses look carefully at the cost and range of communications in an area before choosing a location. Communications will be even more important as new services spring up.

NRTA and CSI agree with Dr. Parker that digital switching is essential for Information Age service. We are now working towards upgrading to digital switching for our companies in three very small Wisconsin communities and several Minnesota communities. We also plan to upgrade another Minnesota community to digital. However, because of the remaining investment in the existing equipment, we are unsure if we can feasibly provide digital capability to our other companies.

Congress should confirm universal information services and nationwide advanced network capability as national goals. NRTA heartily supports Dr. Parker's recommendation that the REA should play a central role in bringing the "basic tools" of the Information Age to rural areas. I am happy to say that REA insured loans and Rural Telephone Bank loans are already authorized under the Act for most of the improvements he recommends. CSI has REA applications on file for loans to carry out the plans to install the digital switches I just mentioned. REA financing is also available for installing optical fiber. REA programs must continue to be the cornerstone of the rural telecommunications infrastructure as it evolves into a nationwide intelligent network.

Making the current REA and RTB programs more effective can go a long way towards including rural America in the Information Age. For example,

1) REA should make use of the $153.8 million in carryover funds authorized in prior years but not made available to rural telephone companies;

2) REA should speed up its processing of loan applications to help rural areas upgrade and update their facilities;

3) REA should be required to set loan amortization schedules in accordance with the request of the Borrower, up to the full period authorized by the Act, not shorter periods that undermine the effectiveness of REA programs;

4) REA should have a flexible dividend policy to permit REA Borrowers to make more investments in rural areas;

5) REA eligibility should not be restricted by raising interest coverage requirements for loans because that can make areas that need service improvements most not be eligible for loans; and

6) REA should adopt policies that encourage Borrowers to provide cellular service and provide loans for their service areas. Service by telephone companies to the large rural areas they cover is necessary to make this advanced technology widely available.

Mr. Chairman, bringing Information Age technology and services to rural areas is important, but it won't be easy. Congress adopted the REA programs because rural areas were not getting acceptable telephone service. Most states have regulated telephone service as a public utility "affected with the public interest." Telephone companies are allowed to provide service in their franchise areas without competition in return for providing universal service at reasonable rates. Both the NTIA 2000 report and Dr. Parker's report recognize that competition can be "counter-productive" in rural areas, where the economic base may be too small to support one firm.

The local franchise will be even more important as rural telephone systems try to modernize their service to keep pace with the information revolution. Dr. Parker is correct in pointing to the danger that competitors would "creamskim" the towns and leave the rural countryside unserved. NRTA believes that the states must not lose their ability to use the local franchise as the only way that has proved successful to extend service to virtually all consumers.

Rural telephone companies are ready to meet the challenge of bringing modern service to their areas, if Congress will only maintain and update the strong national policies and programs that have already made high quality service a reality for so many rural Americans.

Thank you for the opportunity to appear before your subcommittee, Mr. Chairman, and for your strong interest in rural needs.

Mr. Wise. I get the impression, listening to much of the testimony today, that what you are saying is that there was a purpose for REA, which was to bring basic telephone service to rural areas, whether it be multiparty or however it was, it was mainly running lines to homes that otherwise would not be linked up.

In many ways that purpose has been largely met. We have a lot of unserved—according to previous testimony—1 percent of rural customers are not served. But they are largely served with basic telephone service. Now, we have entered a new era where if you are going to survive, then you are going to have to upgrade the system. You are going to have to become able to compete. Otherwise, there won't be a question of the chicken or the egg, because neither one is going to be around to worry about if you don't have modern telecommunications.

Is that a fair summary of the need for REA to continue functioning as it has?

Mr. Sampson. I would say so. When I came into the business 35 years ago, my first job, and it was during college, was climbing poles—telephone—and trying to keep the J-2 line and the rural telephone customers happy. Keep it working. There were like 28 customers on at night, and every night with the rubbernecking and so forth, nobody could hear. I suppose there were those that thought, well, they have got telephone service, what do they want? Maybe it was four party, but anything was supposedly good enough.

Right now I think we are probably at that same point. Sure people have telephone service now. Right now we are looking at it again and we are probably at the same juncture. Down the road we will probably look back and say what people have now in the rural areas and small towns is probably about the same as we looked back and see what people had 25, 35 years ago, and would be appalled at that unless we go forward.

The REA program certainly does have a place for the future, because people expect to come out and have touchtone phones and be able to dial pay phone calls without an operator.

Ms. Goatcher. Mr. Chairman, I would like to say a few words further on that. It is not just the financing was the important thing for my company and the reason that we went to the REA. That was a big part of it.

Another part of it was the technical assistance we got from their staff. From personal experience, my husband, when he passed away, and I became manager for the telephone company, of course my experience was very limited in anything other than the bookkeeping part of it. Because of the technical staff that we had, our field engineers, and all that have helped us, we were able to go ahead and continue like we did, and they really educated me in a manner of speaking.

Also, we have had a set of standards for equipment. We could rely on them to be sure that the vendors met these standards. They had field trials for things like our subscriber carrier. That was in the sixties. In the seventies it was the fiber optics. The small companies do not have that inhouse. They have relied on REA's engineering staff, and their standards to help them with that and to provide it.

I think as time goes on, technologies continue to change, we still face those things. And I think that provision of this staff to restaff it would be a very important part of the REA program.

Mr. **Wise**. Are you still getting those technical services?

Ms. **Goatcher**. Sir?

Mr. **Wise**. Are you still getting those technical services?

Ms. **Goatcher**. We personally haven't taken advantage of them in the last few years, but the last opportunity that we had we did not feel like that it was up to the standard it had been in the early days.

Some of these that have had that experience later could speak further on that.

Mr. **Wise**. Would anyone else care to comment on that?

Mr. **Welch**. Just due to the help that is available from REA, we simply choose to use our consulting engineers because we feel it is far superior to what is available from REA.

Mr. **Wise**. Now, Mr. Welch, have you seen a decline in quality of service provided by REA, or has that simply been the way it has been?

Mr. **Welch**. There has definitely been a decline, probably starting about 5 or 6 years ago.

Mr. **Sampson**. They have had considerable staff reductions, and they haven't replaced people and made the areas larger and basically made the borrowers more dependent on hired consultants.

Mr. **Wise**. Mr. Collins, I am curious. We were hearing from Commissioner Greytok on the ARCO situation. Which side is the USTA pulling for in this dispute?

Mr. **Collins**. That is a fairly good question. That involved——

Mr. **Wise**. I noticed a lot of the audience wants to hear the answer too.

Mr. **Collins**. I am going to dodge it. Actually, it involved two major companies, members of the USTA, and it is a matter involving the franchise. Small companies are very, very interested in retaining that franchise structure. It proved to be very beneficial in developing the telephone services we have had today.

I don't think the franchise has as much value or protection in it in the metropolitan areas, like Washington and Dallas and places like that, where it is not—not one telephone company invading the other, it's the other entrepreneur coming in and building a fiber network or interchange exchange carrier reaching out to the local network to big business customers and taking the revenues. I think USTA stayed out of the fray because it involved several of our big companies.

Mr. **Wise**. Well, in the case of the regional Bell operating companies, are they interested in providing telecommunications services to customers in other service areas?

Mr. **Collins**. I can only answer for Bell Atlantic. We have no plans to do that. The only reason we would invade another franchise area or seek to would be because the facility that we sought from probably the local telephone company was not available. Otherwise, I think we would stay, generally stay with our franchise territory.

Mr. **Wise**. Has Bell Atlantic ever been in the position of having to defend its local franchise rights against another company?

Mr. **Collins**. The only case I am familiar with, and I am not familiar with all the details, could be in Virginia where Virginia Power has indicated they were going into some communications business, and I believe they appealed to the local commission. I would have to check my facts on it. If I am wrong, I will get back to you.

Mr. **Wise**. Also, Mr. Collins, there is a big push to remove the modified final judgment service restrictions on the Bell companies. I think it is safe to say Bell Atlantic supports such a change.

Mr. **Collins**. Yes. Aggressively, sir.

Mr. **Wise**. My question is, how will rural customers benefit if these MFJ restrictions are lifted?

Mr. **Collins**. I am glad you asked that. I have 1½ days of discussion on that. Let me brief it by saying I believe we will bring about the introduction of a wider variety of information services and new technologies. We will provide the incentive for those services to be developed faster than they would otherwise be developed, we would drive the costs down because the demand would develop faster and thereby all of those services would be made available sooner and at more affordable prices in rural America.

In particular, we would certainly like to be a participant in but not control all data bases. That would be unreasonable, data bases will be available to all segments of the country as a matter of the communication channel being established to reach there. If we can help those to develop, the communications facilities the small companies have will be fully utilized to get the information services there locally.

Mr. **Wise**. Turning to cable for a minute, Mr. Sampson, I understand your company will be providing cable TV, is that correct? If it is, are you doing that under the rural exemption?

Mr. **Sampson**. We got into the business in one of our telephone companies with an exemption still operate that way. I did spend many years trying to encourage the REA to amend some of their policies so that would have encouraged the telephone companies to serve their own areas because there was a tremendous operational savings, it would have brought cable much quicker. And, unfortunately, they don't do that and the FCC rule was somewhat restrictive with the size town that could be built by telephone companies.

But we did go on of our own choosing. We did decide to build in other areas, and we did come up with like 75 cable TV systems primarily in the upper midwest. It got to be of such size, we spun it off into a separate publicly held company. For the life of me, I don't know why other companies didn't do it. They should have been able to see it was a golden opportunity. Certainly they should have been doing it—when permitted—in their own territories. Anywhere it is remotely feasible to do it, at the present time, they should be doing it.

There is very good synergism. Our people are billing the customers, doing the maintenance, the customer service, every aspect of it. There's very high synergism level.

Mr. **Wise**. Are any of the rest of you involved in—are any of the rest of you qualifying for the exemption, and are you providing cable service?

Ms. Goatcher. We have an affiliate which provides cable service in three communities that we do not serve telephone service. We are now in the process of filing for a waiver for several of our very small, of our service areas. We have two or three that are very, very small. And at this time we do not feel that it would be economically feasible to try to provide the TV service there. We are in hopes that the cross ownership will be lifted and that through research and development that we can be able to provide telephone service to those, I mean TV service to those communities through a joint facility.

If we were able to do that, where right now we only serve maybe the city limits, you know, with the cable, we could afford to go out and maybe serve the rest of the rural customers.

Mr. Wise. We are going to hear Mr. Welch first——

Mr. Welch. We qualify for the exemption. The economic studies we have done in our area, due to our density, two prescribers per route mile, the feasibility of it is out of the question until we can use fiber optic technology. Whenever we can use that jointly for video and voice network both, certainly it will become feasible at that time.

Mr. Wise. Mr. Collins.

Mr. Collins. I was going to suggest as part of your "What can the FCC do for us", you can encourage them to complete their study this year on time, which I believe will show that the cable cross ownership rule should be modified.

Mr. Sampson. Mr. Chairman, I have never suggested anybody build cable TV in a rural area of the telephone company in all the years I spent trying to convince REA borrowers. It doesn't make sense to build the rural area. The idea would be at least we go in with cable, and if a technology comes along, they would be there.

Now what has happened is most cable companies have come in, taken the towns, and there is only the rural area left, so they have kind of missed the boat. Even if they—towns—are as small as 75 or 100 homes you can cable, there is ways you can do it with the telephone company doing it.

Mr. Wise. This is my aside. I think what the cable companies need right now is a good dose of competition. It is my hope if I can have anything to do with speeding that along, I will. And so I look forward to working with you on that. I think I can get pretty much agreement from this panel on that subject.

I have learned a lot, and I think this has been a very helpful hearing. Let me just stress what the purpose of this hearing is and a couple more we are going to be having, is to lay a foundation for where we are with rural telecommunications. I think it is extremely important, as Chairman English indicated, what he is doing in his subcommittee is working on an overall rural development bill.

I believe in the area of cable, you are going to see some legislation at least beginning to move this year, a lot of issues that are before us, the REA in its role, and so in these important areas, I want to lay the foundation for where we are and what it is we need to be doing.

I appreciate your being involved in this. You have also, incidentally, supplied the ground work for a couple of hearings that we had not only contemplated, but we will now be looking into. So it has been valuable for many reasons. I want to thank each of you for coming and preparing such excellent testimony.

At this point, I declare this hearing adjourned.

[Whereupon, at 3:30 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

BRINGING THE INFORMATION AGE TO RURAL AMERICA

THURSDAY, OCTOBER 12, 1989

House of Representatives,
Government Information, Justice,
and Agriculture Subcommittee
of the Committee on Government Operations,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:28 a.m., in room 2247, Rayburn House Office Building, Hon. Robert E. Wise, Jr. (chairman of the subcommittee) presiding.

Present: Representatives Robert E. Wise, Jr., Glenn English, Al McCandless, and Steven Schiff.

Also present: Audrey Bashkin, professional staff member; Aurora Ogg, clerk; and Brian Lockwood, minority professional staff, Committee on Government Operations.

Mr. Wise. This hearing will come to order.

If it is all right with my colleague, Mr. Schiff, we will dispense with opening statements or make them part of the record, and we will just begin immediately.

We are delighted to see such a good panel of our colleagues.

Basically, what we are doing is looking at rural telecommunications issues, particularly what could be done in the upcoming Congress, dealing with REA and other areas, that could foster advanced telecommunications, that can benefit rural America.

At this time, I would like to call on Congressman Skelton for any statement he might wish to make.

STATEMENT OF HON. IKE SKELTON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

Mr. Skelton. Thank you, Mr. Chairman. I thank you and the members of this committee for the opportunity to be with you this morning.

As you know, I am chairman of the Congressional Rural Caucus, and I am also chairman of the Small Business Subcommittee that deals with rural development and has that within its jurisdiction. As a result, I am very interested in the issue we are discussing today—telecommunications in rural America.

Mr. Chairman, looking at the ways to revitalize rural areas, I can think of very few better ways to start than with communications. We all know that nonurban areas need better educational opportunities, better health care delivery systems, and the development of more meaningful and economically viable jobs.

Rural America faces higher energy and transportation costs. It has a farm economy that has recently had its ups and downs—a great deal of downs, as we know—and a "brain drain" of many of its bright young citizens to the more populous areas, and we, frankly, must seek solutions to these problems.

However, the best investment this country could make would be in modern telecommunications systems for the entire Nation. With this investment would come the full use of our Nation's greatest resource—its human resource. In this age of rapid information output and retrieval, rural America really must not fall further behind.

With use of fiber optics, with use of computers, with use of satellites, less populated communities can be empowered, through information and education, to assist agriculture, to assist industry, to assist students, and even senior citizens and small businesses and local governments.

Information linkage will also assist the average rural citizen, putting him or her in contact with economic and social services on the various levels of government. One of the problems with delivering assistance to rural areas is that, many times, residents either do not know about existing government and private assistance or they do not have the capacity to connect with those services.

A more comprehensive telecommunications network in rural areas would greatly enhance the health-care delivery, a system that is already suffering; rural hospitals, which we all know are having a hard time attracting and keeping specialized physicians. This will enable them to use the expertise that is readily available in the urban and the suburban areas. Medical records and case histories, for instance, would be only minutes away and retrievable.

Small schools could take advantage, and those of us that live in small towns really understand this. Small schools could take advantage of State and university libraries. They could even take advantage of the Library of Congress.

Many schools already take advantage of satellite technology to share teachers, but not enough—for example, teaching foreign languages and teaching some science courses that they cannot afford on their own local payrolls. Computers and better telecommunications can make this sort of sharing even more important.

Rural small businesses could take advantage of better communications and technology. Introducing and integrating telex, facsimile, electronic mail, data processing, and other services in rural areas would give these businesses many of the same resources that their urban counterparts today take for granted. Computer and information technology has moved so rapidly in the last 15 years and will probably continue to modernize even quicker in the days ahead, that rural areas, Mr. Chairman, must begin to catch up and must keep pace with the rest of the world or they are going to find themselves literally out in the cold.

Local leadership is the key to the development of any community. With enhanced communications, local leaders will be able to easily obtain knowledge needed to make better decisions for the community. Local law enforcement—I think this is already coming into being—local enforcement and emergency services would be in touch with other authorities to have better law enforcement and to save lives and property.

Some options to enhance our human resources could include Federal collaboration with State and local governments to upgrade the public-information infrastructure, as well as basic vocational education. Increased funding for civil research and technology development could be provided. Such a step would be concerned not only with manufacturing but also the service industries, which constitute three-fourths of our Nation's economy today.

Congress needs to push for a national telecommunications policy. A clearinghouse must be set up for information about telecommunications technology and establish model programs to libraries, schools, universities. Every effort should be made to attract the telecommunications industry to fully invest in rural America.

Once again, I am talking about empowering our Nation's greatest resource, its people.

Mr. Chairman, someone that decides to move to a small town or a rural area should have the same opportunity, and the technology is there today and it is being developed there today, and the cost is not that significant. There is no reason why they cannot have the same advantages educationally, business wise, and in other areas, as they have should they live in Kansas City or St. Louis, MO.

Thank you so much. I appreciate this.

[The prepared statement of Mr. Skelton follows:]

STATEMENT OF
CONGRESSMAN IKE SKELTON
BEFORE THE
GOVERNMENT INFORMATION, JUSTICE, AND AGRICULTURE SUBCOMMITTEE
OF THE
GOVERNMENT OPERATIONS COMMITTEE

October 12, 1989

MR. CHAIRMAN, I WANT TO THANK YOU AND THE MEMBERS OF THIS COMMITTEE FOR THE OPPORTUNITY TO SPEAK THIS MORNING. AS CHAIRMAN OF THE CONGRESSIONAL RURAL CAUCUS AND AS CHAIRMAN OF A SMALL BUSINESS SUBCOMMITTEE THAT DEALS WITH RURAL DEVELOPMENT, I HAVE A GREAT INTEREST IN THE ISSUE WE ARE HERE TO DISCUSS TODAY, TELECOMMUNICATIONS IN RURAL AMERICA.

WHEN LOOKING AT WAYS TO REVITALIZE RURAL AREAS, I CAN THINK OF VERY FEW BETTER WAYS TO START THAN WITH COMMUNICATIONS. WE ALL KNOW THAT NON-URBAN AREAS NEED BETTER EDUCATIONAL OPPORTUNITIES, BETTER HEALTH CARE DELIVERY SYSTEMS, AND THE DEVELOPMENT OF MORE MEANINGFUL AND ECONOMICALLY VIABLE JOBS. RURAL AMERICA FACES HIGHER ENERGY AND TRANSPORTATION COSTS, A FARM ECONOMY THAT HAS RECENTLY HAD ITS UPS AND DOWNS, AND A "BRAIN DRAIN" OF MANY OF ITS BRIGHT YOUNG CITIZENS TO MORE POPULOUS AREAS. WE MUST SEEK SOLUTIONS TO ALL OF THESE PROBLEMS.

HOWEVER, THE BEST INVESTMENT THIS COUNTRY COULD MAKE WOULD BE IN A MODERN TELECOMMUNICATIONS SYSTEM FOR THE ENTIRE NATION. WITH THIS INVESTMENT WOULD COME THE FULL USE OF OUR NATION'S GREATEST RESOURCE, ITS HUMAN RESOURCE. IN THIS AGE OF RAPID INFORMATION OUTPUT AND RETRIEVAL, RURAL AMERICA MUST NOT FALL FURTHER BEHIND.

WITH THE USE OF FIBER OPTICS, COMPUTERS AND SATELLITES, LESS POPULATED COMMUNITIES CAN BE EMPOWERED, THROUGH INFORMATION AND EDUCATION, TO ASSIST AGRICULTURE AND INDUSTRY, STUDENTS AND SENIOR CITIZENS, SMALL BUSINESSES AND LOCAL GOVERNMENTS.

INFORMATION LINKAGE WILL ALSO ASSIST THE AVERAGE RURAL CITIZEN, PUTTING THEM IN CONTACT WITH ECONOMIC AND SOCIAL SERVICES ON THE FEDERAL, STATE AND LOCAL LEVELS. ONE OF THE PROBLEMS WITH DELIVERING ASSISTANCE TO RURAL CITIZENS IS THAT MANY TIMES RESIDENTS EITHER DO NOT KNOW ABOUT EXISTING GOVERNMENT AND PRIVATE ASSISTANCE, OR THEY DO NOT HAVE THE CAPACITY TO CONNECT WITH THESE SERVICES.

A MORE COMPREHENSIVE TELECOMMUNICATIONS NETWORK IN RURAL AREAS WOULD GREATLY ENHANCE HEALTH CARE DELIVERY, A SYSTEM THAT IS ALREADY SUFFERING. RURAL HOSPITALS, WHICH ARE HAVING A HARD TIME ATTRACTING AND KEEPING SPECIALIZED PHYSICIANS, WILL BE ABLE TO USE THE EXPERTISE THAT IS READILY AVAILABLE IN URBAN AND SUBURBAN AREAS. MEDICAL RECORDS AND CASE HISTORIES WOULD BE ONLY MINUTES AWAY.

SMALL SCHOOLS COULD TAKE ADVANTAGE OF STATE AND UNIVERSITY LIBRARIES, EVEN THE LIBRARY OF CONGRESS. MANY SCHOOLS ALREADY TAKE ADVANTAGE OF SATELLITE TECHNOLOGY TO SHARE TEACHERS, FOR EXAMPLE FOREIGN LANGUAGE AND SCIENCE TEACHERS, THAT THEY CANNOT AFFORD TO KEEP ON THEIR PAYROLLS. COMPUTERS AND BETTER TELECOMMUNICATIONS CAN MAKE THIS SORT OF SHARING EVEN MORE IMPORTANT AND VIABLE.

RURAL SMALL BUSINESSES COULD TAKE ADVANTAGE OF BETTER COMMUNICATIONS AND TECHNOLOGY. INTRODUCING AND INTEGRATING TELEX, FACSIMILE, ELECTRONIC MAIL, DATA PROCESSING AND OTHER SERVICES IN RURAL AREAS WOULD GIVE THESE BUSINESSES MANY OF THE SAME RESOURCES THAT THEIR URBAN COUNTERPARTS TAKE FOR GRANTED. COMPUTER AND INFORMATION TECHNOLOGY HAS MOVED SO RAPIDLY IN THE

LAST FIFTEEN YEARS, AND WILL PROBABLY CONTINUE TO MODERNIZE EVEN QUICKER, THAT RURAL AREAS MUST BEGIN TO CATCH UP AND KEEP PACE WITH THE REST OF THE BUSINESS WORLD.

LOCAL LEADERSHIP IS THE KEY TO THE DEVELOPMENT OF ANY COMMUNITY. WITH ENHANCED COMMUNICATIONS, LOCAL LEADERS WILL BE ABLE TO EASILY OBTAIN THE KNOWLEDGE NEEDED TO MAKE THE BEST DECISIONS FOR THEIR COMMUNITY. LOCAL LAW ENFORCEMENT AND EMERGENCY SERVICES WOULD BE IN TOUCH WITH OTHER AUTHORITIES TO BETTER SAVE LIVES AND PROPERTY.

SOME OPTIONS TO ENHANCE OUR HUMAN RESOURCE COULD INCLUDE FEDERAL COLLABORATION WITH STATE AND LOCAL GOVERNMENTS TO UPGRADE THE PUBLIC INFORMATION INFRASTRUCTURE AS WELL AS BASIC AND VOCATIONAL EDUCATION. INCREASED FUNDING FOR CIVILIAN RESEARCH AND TECHNOLOGY DEVELOPMENT COULD BE PROVIDED. SUCH A STEP WOULD BE CONCERNED NOT ONLY WITH MANUFACTURING BUT ALSO THE SERVICE INDUSTRIES, WHICH CONSTITUTE THREE-QUARTERS OF THE NATION'S ECONOMY.

CONGRESS NEEDS TO PUSH FOR A NATIONAL TELECOMMUNICATIONS POLICY. A CLEARINGHOUSE MUST BE SET UP FOR INFORMATION ABOUT TELECOMMUNICATIONS TECHNOLOGY AND ESTABLISH MODEL PROGRAMS THROUGH LIBRARIES, SCHOOLS AND UNIVERSITIES. EVERY EFFORT SHOULD BE MADE TO ATTRACT THE TELECOMMUNICATIONS INDUSTRY TO FULLY INVEST IN RURAL AMERICA.

ONCE AGAIN, I AM TALKING ABOUT EMPOWERING OUR NATION'S GREATEST RESOURCE, ITS PEOPLE. PROVIDING RAPID INFORMATION AND EDUCATION TO CITIZENS OF ALL AGES WILL ENABLE THEM TO MAKE THE BEST DECISIONS AND CONTRIBUTIONS TO THEIR RURAL COMMUNITY.

Mr. Wise. Thank you, Ike, and I know you have got a busy schedule. I just want to thank you for the leadership—as one who also comes from a rural area—the leadership you have shown in the rural caucus, and I think this may, given the commitment Glenn English in the Agriculture Committee and the rural development efforts, I think this may be the year we can move some rural development legislation.

Thank you.

Mr. Skelton. Thank you.

Mr. Wise. We had also had a request, because of a time constraint, from Congressman Gunderson.

Steve, if you wanted to proceed, and then we will go to our regular order.

STATEMENT OF HON. STEVE GUNDERSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WISCONSIN

Mr. Gunderson. Thank you very much, Mr. Chairman, and I will be brief. I'll ask unanimous consent that my statement be inserted in the record and I want to share with you just some general comments focusing on one of the few areas in rural America in this country where telecommunications has already played and is playing a vital role.

It was back in 1979 that my home county, Trempealou County, a small farm county of approximately 20,000 people began a process known as western Wisconsin communications cooperative. It was clearly organized under the traditional cooperative movement. It was a vehicle which was capitalized through a Kellogg grant and obtained subscriptions from various residents throughout the area because clearly as we all know, cable television has not been a very viable entity in terms of the private sector in rural America.

So they went out and through the cooperative, sold subscriptions to members, farmers, rural people, small town folk alike and they began a process of setting up an interacting cable system throughout the entire county. It became first and foremost operated through the schools, and now we have a central studio located through the county courthouse and the system is used primarily for education in rural schools where you frankly do not have the enrollment, you do not have the students to offer many of the classes that our urban counterparts are able to do such as the language courses, some of the specialized vocational courses, et cetera.

The system works and I considered actually bringing a video today to show you how it works in that you have television receiving and sending signals in every school. So the teacher can be in one school and they can then switch to school No. 1 where the students will be able to ask the teacher questions and then they will go on to school No. 2. All of this is broadcast so there's a total interaction at the same time that this whole operation is undergoing.

Now, as I indicated, it started out through capitalization with a Kellogg grant. The Farmer's Home Administration then came in and provided some early loan money for the startup of the program and then the Rural Electric Administration came in and provided some loan money. So, it has been a combination of different government agencies through different programs that have been helpful to this particular effort.

It is successful in education. It is also very successful in public access, broadcasting city council, county board, various type of government information. It is very successful in public access. Frankly, the senior citizens of my home county have really taken over the operation of the cameras and the running of the studio for most of this which has another side effect which is obviously a very positive one and it has many, many successes.

I will tell you however though its success has also emphasized one of its major problems and I think an area where the government needs to become involved because despite these various loans that it's received from the Federal Government, it has been forced to focus really on the small towns and villages and one of the most emotional and contrary aspects of all of this is that many farmers and rural people, myself included, bought subscriptions back in 1979 and they have never brought this cable out into the rural areas because frankly, the cost per mile of setting up this cable into the rural areas is no different than the problems we've had with rural telephone and rural electric in the past.

So frankly there are some hard feelings out there in regard to that and it's clearly an area where if we are going to help rural America in its transition which certainly we are experiencing and I would assume most rural areas are, and in a time of an information age bringing that information on a daily basis to these farmers, we're going to have to find the means in terms of capital, in terms of revolving loans, in terms of technical assistance, et cetera, to bring that one step further so that it fully is available to the rural folk because yes, we have the satellite systems that everybody has across rural American but we also have the problems with that in that it is not fully utilized in rural areas for all the reasons everybody knows about.

I could go into length about a couple of different programs but I would suggest that as we talk about rural development, we must talk first and foremost about the quality of life for all our rural citizens. We must talk secondly about the whole concept of education and quality and equal education in rural America to the urban areas and third, as we see our farming areas switch into diversified economies, you are going to look at an area of training and retraining unprecedented in rural America.

I don't have to tell anybody at this panel or anybody on this committee that frankly, rural folks are not all that confident and willing to go forward and say, I just don't know and I need to learn.

If we can within the privacy of their own home provide that in school education and retraining for them, it is going to be an absolutely essential tool to economic development. So with that Mr. Chairman, I thank you for the opportunity to share with you both a success story and a story that has indicated at least to me lessons where the Federal Government needs to expand.

[The prepared statement of the Mr. Gunderson follows:]

RURAL TELECOMMUNICATIONS AND EDUCATION

Hearing Statement of

CONGRESSMAN STEVE GUNDERSON
WISCONSIN THIRD CONGRESSIONAL DISTRICT

October 12, 1989
10:00 a.m.

Before the
SUBCOMMITTEE ON GOVERNMENT INFORMATION,
JUSTICE, AND AGRICULTURE
HOUSE GOVERNMENT OPERATIONS COMMITTEE

Good morning. I would like to thank Chairman Wise for this opportunity to discuss the role and importance of a strong telecommunications network in rural America.

I would like to share with you two programs in which education in several western Wisconsin's rural school districts is enhanced by telecommunications. One of these programs is called "Project Circuit" - a local cable cooperative education programming effort. The other is called the "Wisconsin Rural Reading Improvement Project," part of an education laboratory designed by Congress to research, develop, test and disseminate innovative ideas in education.

Many of western Wisconsin's school districts have enrollments under 1200 students, which presents a challenge for school boards, administrators and teachers to provide the education needed for our youngsters to be successful in the future.

For those of us representing rural areas, we know that the smaller school districts have limited money and resources to provide the classes that are needed to keep students competitive with those school districts that have the ability to provide the curriculum they wish.

PROJECT CIRCUIT

Since 1979, the Western Wisconsin Communications Cooperative in Independence has been running "Project Circuit," an education program with a partnership of eight small school districts; Independence, Osseo-Fairchild, Eleva-Strum, Arcadia, Whitehall, Blair-Taylor, Alma Center, and Galesville-Ettrick-Trempealeau. "Project Circuit" is also accessed by the Western Wisconsin Technical College in La Crosse.

"Project Circuit" is an interactive cable access education system, with the curriculum content controlled by the school districts and taught by teachers within the participating school districts. With the eight school district forming a cooperative teaching effort, they can share the costs of providing essential classes that they normally would not find cost effective, yet necessary.

Allow me to explain how "Project Circuit" functions. At the beginning of each school year, the eight schools meet to determine what courses they are not able to provide by itself, but can be provided by another school. A list of courses are selected as well as the providing school and teacher. These courses are then made available to the students before each school semester. This year, five courses are being offered through "Project Circuit" - Spanish, French, German, Shorthand, and Computer Digital Logic.

BEST COPY AVAILABLE

Each school has its own cable channel, linked by Western Wisconsin Communications Co-op which each school may access by simply changing the channel selector.

When one of these "Project Circuit" courses are provided, the teacher will present the course in a designated teaching station. The instructor will teach the class not only to the students in the room with them, but over the cable channel which is being telecast right from the room. The teacher has full control of the cameras to coincide with the teaching materials he or she is presenting.

The schools on the other end only have to turn the television on, and tune into the appropriate channel, with the participating school's students receiving instruction via cable.

For example, Arcadia conducts a Spanish class from its teaching station and is picked up by Osseo-Fairchild and Alma Center school. Getting a three for the price of one deal.

Rather than having each school with one Spanish teacher teaching five students, the schools can share the cost of one teacher who teaches before 20-30 students at a time. The beautiful thing about "Project Circuit" is that the students in the other schools can interact with the teacher over the same cable system.

As I mentioned, "Project Circuit" was started in 1979 through loans with the Farmers Home Administration. Since then, Western Wisconsin Communications Co-op has been working through the Rural Electrification Administration to continue providing education curriculum to the eight school districts.

How important is telecommunications for rural America? Without adequate facilities and equipment, these eight school districts would be taking on the financial burden of trying to provide education that is required of our youngsters if they are to meet the high standards we keep trying to upgrade.

Not only is the educational quality enhanced in these eight schools through the cooperative curriculum, but these schools also have access to their local governments, service agencies, and yes, politicians, through the Trempealeau County public access television.

WISCONSIN RURAL READING IMPROVEMENT PROJECT

The other program, the "Wisconsin Rural Reading Improvement Program," is conducted in 18 school districts in western and northern Wisconsin, eight of them in my district. It is a progressive reading program using the telecommunications resources of satellites, VCRs, computers, and telephones.

The program, in its second year, is being conducted by the North Central Regional Educational Laboratory to upgrade reading instruction in small schools in Wisconsin.

The project incorporates a television program called "Storylords" to teach first through fourth graders reading and thinking skills. The program is based on a fantasy with a student named Norbert who has been appointed as an "Assistant Storylord" to help save the planet Mojuste, from Thorzuul. Thorzuul is the evil Storylord who wants to rule Mojuste by turning all the good citizens into stone tablets.

The citizens can escape the clutches of Thorzuul by solving a problem. Student's reading and reasoning skills are challenged by this struggle between good and evil through the instructional support of the teacher in the classroom.

Teachers simply record the "Storylords" program that is transmitted via satellite on the VCRs in their schools. The taped program is worked into the teachers classroom reading instruction.

The program uses a complete range of telecommunications. Broadcast television transmits "Storylords" for schools to tape and use on VCR. Narrowcast television and radio helps train teachers. Computer networking and telephone conferencing calls let teachers share problems and curricular ideas with fellow teachers and with a reading expert who monitors and reinforces their activities.

As I mentioned, "Storylords" is in its second year. In the third year, "Storylords" will be refined and used in more schools in Wisconsin, as well as in schools in Iowa, Michigan, Minnesota, and Illinois.

The program is operated through the North Central Technical College, the University of Wisconsin-Eau Claire, the University of Wisconsin-Stevens Point, three Cooperative Educational Service Agencies, the Wisconsin Department of Public Instruction, and the Wisconsin Public Radio and Television Networks.

As you can see, these two programs allow teachers and school to expand their teaching curriculum, and reduce some of the financial burden of providing essential courses, but they also push these school districts into an innovative and developing form of education.

Access, curriculum enhancement, resource expansion, cost efficiency, and teaching development are all valuable telecommunication assets for education in rural America.

Thank you.

Mr. WISE. We greatly appreciate that, particularly the personal illustration. At this point, we hear from someone who's no stranger to rural communications or cable issues, Congressman Boucher from Virginia. Good to have you.

STATEMENT OF HON. RICK BOUCHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VIRGINIA

Mr. BOUCHER. Thank you very much, and I want to begin by commending you on holding this hearing today on how to bring modern telecommunications into rural areas, and like yourself, I represent a rural area. Mine is in the western part of the State of Virginia, and I am very much concerned that our region is going to be left behind when much of the rest of the country updates its telecommunications infrastructure with fiber optic cable or some other advanced technologies.

Without affirmative government action, I am very much concerned that our country, ultimately, is going to become divided, as a Nation, among technological have's and technological have-nots, and the rural areas are most likely to be the residence of the have-nots.

Historically, rural economies have thrived because of location-specific advantages. They have had minerals or they have had crops or timber which were in demand in outside markets. Increasingly, however, new economic development depends on specialized human resources, on information processing, and on telecommunications.

More than 50 percent of all U.S. workers today are currently employed in information-sensitive industries, and that proportion is growing. Several recent studies indicate that investment in telecommunications contributes to economic growth, with the greatest benefit accruing to the less-developed areas.

Just as in the past, when a highway or a waterway or a railroad link could boost the fortunes of remote towns, so today modern telecommunications services can bolster and diversify the economic base of rural America.

As we move into the 21st century, our telecommunications infrastructure will become the interstate highway of information. Those regions that are linked along the system will benefit from increased economic development opportunities, and areas that are not linked are destined to, at best, remain stagnant and probably will decline.

The advent of fiber optic cable will provide a technological catalyst to information services. These hair- thin wires are capable of carrying vast amounts of information, with higher fidelity than traditional twisted pairs of copper wire, which is the basic means that telephone service is delivered to the homes today, or coaxial cable, which is the primary means by which cable television service is delivered.

Already, we are seeing long-distance companies installing fiber in their trunk systems, and as fiber costs drop, it is quickly becoming attractive for installation in new housing developments. Estimates are that high-density population areas will be fully equipped with fiber optic cable and the services that fiber can provide sometime within the course of the next decade.

Unfortunately, the same thing cannot be said for rural America. Left to normal market forces, there could be a gap of anywhere from 10 to 20 to 30 years between the installation of fiber in urban areas, offering the full services that can be accommodated over a fiber network, and the installation of that same kind of fiber network in rural America, and that is a very enormous gap, which I think all of us representing rural areas need to be aware of and need to be concerned about.

That pattern of fiber installation will make our urban and suburban areas information-rich in comparison with their information-poor rural brothers. The impact of that disparity would be felt not just in rural America but, in fact, all across the country.

In the most obvious instance, it will be extremely difficult to motivate new businesses to locate in rural regions. More and more businesses are depending upon information technology, and if those services are available in urban areas and not available in rural areas, it is going to be very difficult to convince a company that has to depend upon that kind of infrastructure to locate in rural America. So, it is a real adversity in terms of economic development.

A more subtle problem, perhaps, relates to the educational disadvantages that rural areas would have to endure. As new technology emerges, the new educational products, such as home-study aids will emerge. Those programs will enhance the schools and students with access to them and disadvantage those that do not.

In short, Mr. Chairman, I think that universal equal access to information is as important to America in the 21st century as universal access to electricity was important to this Nation in the 20th century.

When we were considering universal access to electricity and when we were constructing the interstate highway system, we depended upon the Federal Government to provide major financial support for the building of that infrastructure, and I am convinced that eventually we are going to be calling on Federal resources to help build an information infrastructure that is the modern and future parallel to that old infrastructure development of decades ago.

Now, we all know that, given the severe constraints on the Federal budgeting process presently, that any hope that we will have Federal resources applies to that effort in the near term is probably unrealistic, and so, I think we have to look for more creative avenues.

As you know, Mr. Chairman, and as you kindly mentioned in your introduction, I have offered one such alternative. It is H.R. 2437, the Cable Competition Act, of which I am pleased to say that you are an original cosponsor, as is my colleague from Tennessee, Mr. Cooper. That legislation has a number of goals.

It is designed primarily to help lower rates for cable television service be injecting competition into a market that is characterized only by monopoly today. We think that by offering competition, we also can provide some viewing options, of which consumers are currently deprived, but the legislation also offers one mechanism that could help fund the important public policy goal of ensuring that fiber optic cable is deployed in rural areas.

It will just about cut within half the time within which telephone companies would ordinarily deploy fiber in the absence of the incentive that we are providing and that is the ability to offer a video signal. If they cannot offer the video signal, then the time will be about twice what would be if they can offer that signal.

So, we think our legislation is one creative way to accelerate the schedule upon which fiber optic is deployed, both in urban and in rural areas, and I would commend it to your consideration in that light.

I do not know, Mr. Chairman, that that is the best possible solution to the telecommunications problem that I have described, but it is the only one that I know of for the present time, and I would very much welcome the result of this subcommittee's deliberations, as you continue to examine that very important subject, and I thank you very much for having me here today.

Mr. **Wise**. Thank you, Rick, and I happen to agree with you. In fact, I would hope that one goal of any rural telecommunications bill that emerges is to have universal information service by the year 2000, because otherwise, we are just going to be left increasingly behind.

Someone who has been very active, also, in rural issues—and Tom, I have been reading the GAO report that you had commissioned on ending some duplication and overlapping of services in rural areas, and when you start leafing through there, it is kind of astounding some of the programs that we do have that overlap from different agencies.

We are privileged to hear today from Representative Tom Coleman.

STATEMENT OF HON. THOMAS COLEMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSOURI

Mr. **Coleman**. Thank you, Mr. Chairman, and thank you for the invitation to appear today.

I am delighted to hear all the fine testimony my colleagues have offered. It is nice to find people within the Congress and our House here who have the same interest, even though we serve on various committees and sometimes do not always get our heads together in a forum like this. So, I think it is very good that you are holding these hearings today.

As you mentioned, Glenn English and I are, in fact, coming together on a rural development proposal, and we are very optimistic that we can present something to the House of Representatives this fall and perhaps even have some law later on this year. And much more importantly since I have been working on this for a number of years, is the need to diversify our rural economy. There is no question about it.

While agriculture is always going to be extremely important, I think, for the future of rural areas to succeed and for small towns to be able to continue, we definitely are going to have to diversify our economic base. What this is going to require of us is to plug into the nationwide economy that exists. In order to do that, we have to capture high technology. We have to use fiber optics. We have to use telecommunications systems. We have to use satellites and computers.

No more is rural America isolated. In many cases in the past, even the Federal Government has organized itself around regional urban centers. That is not necessary today, because people 200 miles from an urban center can do keypunch, can do computer input, et cetera, can take care of these types of administrative capabilities.

So, one of the things that I have mentioned in the past and have proposed in legislation is—and I think it might be appropriate for this committee, because you are the Government Operations Committee—to consider the location of Federal facilities and how that might tie into rural economic development.

Another important thing—and you mentioned the GAO report that I requested: What it showed was that nobody in this Federal Government—be it the General Accounting Office, the Office of Management and Budget, or any other organization that you might think of—really knows how many rural-oriented programs there are in this country, and as a result, they are all over the map. The jurisdictions vary from department and agency to agency.

Just at first blush, we found 88 different programs administered by 13 different departments, and it is a need for, if nothing else, a single-source collection point for information on rural development for towns and communities to depend on. But beyond that, we are trying to make some sort of rational approach to rural development, so it is not just a scattered, shotgun approach, but targeted efforts I think the GAO report indicates that a more efficiently run delivery system would save money and provide better services, as well.

I agree that, while we talk roads, bridges, and highways, telecommunications are going to be those pathways of the future, and I think it is important for Congress to have an overall approach to it.

Another thing I want to mention is the utilization of technology transfer centers. I have proposed, in the past, and I am sure others would agree, that technology is extremely important in rural areas, and I have proposed a program that would offer some grants to nonprofit organizations. I would mention land-grant institutions, because they are in place, but not limit it to them, to be able to come up with a program that would actually apply and utilize the technology that exists or might exist and be able to utilize that in new marketing ideas, creation of new products, and new manufacturing techniques in rural areas. That is something I think is an exciting part and component of what we, together, might be able to do, between our two committees.

Let me just say, in closing, that education is extremely important. We have seen the lack of information in some rural schools. We have approached that problem on the basis of trying to develop with guidance counselors a program which this Congress has adopted on a pilot-project basis. And as we are wont to do here, the pilot project is my district, but the fact is that we are trying to utilize technology by bringing information to our rural schools so that the decisionmaking process for young people is facilitated. Young people need to be able to decide what they are going to do with their future, career-wise, what to do about a post-secondary institution, or a scholarship. How do you apply? How do you take the SAT, et cetera, and what schools are out there and what do they offer.

That type of information availability—what we are doing as a pilot project—is, I think, part of what could be tied together in a national network.

So, I commend this subcommittee. Mr. Chairman, thank you. I hope that, working together, all of us can come up with something to help our rural communities, because without something new, they are simply not going to be able to succeed.

[The prepared statement of Mr. Coleman follows:]

STATEMENT OF
E. THOMAS COLEMAN
before the
SUBCOMMITTEE ON GOVERNMENT INFORMATION,
JUSTICE, AND AGRICULTURE
COMMITTEE ON GOVERNMENT OPERATIONS

October 12, 1989

Mr. Chairman, I appreciate your invitation to testify before the Subcommittee this morning and your interest in the role telecommunications can play in rural economic development.

As you may know, I have been extremely interested in rural development for a number of years, especially as I saw my own area of the midwest, north Missouri, suffer through the farm recession of this decade. Although the farm economy is on the rebound, the fact is that the impact of American agriculture's return to profitability in many areas has not reached beyond the farm gate.

As we on the Agriculture Committee proceed with a rural development bill aimed at revitalizing rural communities, infrastructure needs must be addressed. And, as we approach the 21st century, it is obvious that adequate communications facilities are as vital as good roads and bridges, and water and sewer systems.

In testimony before the Agriculture Committee this summer, it was estimated that 66 percent of the American workforce will be employed in information services by the turn of the century. We must prepare now for rural America to take part in this information age.

This morning I would like to draw your attention to two pieces of legislation I introduced earlier this year that should be part of our rural development telecommunications provisions: H.R. 2412, the Rural Development Data Base Act of 1989 and H. Con. Res. 126, a resolution urging the President to revoke an executive order of the last decade.

The General Accounting Office at my request issued a report early this year that examined federal programs and activities that serve rural communities. The CAO identified 88 rural development programs currently overseen by 13 federal departments, commissions and agencies. This report clearly illustrated the need for a single collection point for tracking and coordinating federal rural development efforts.

H.R. 2412 would provide for a single-source compilation and public dissemination of details on federal, as well as state and local, rural development programs. The development and maintenance of this data base will ensure the availability of necessary information to formulate clear and sound rural development policy. And, Mr. Chairman, with modern telecommunications systems available to rural Americans, it also would mean this data base would be accessible to community and rural development leaders throughout the country.

House Concurrent Resolution 126 also could mean jobs for rural Americans in places where an up-to-date communications infrastructure is in place. In 1978, President Carter signed Executive Order 12072 that required all federal facilities to the extent possible to be located in centralized business centers of urban areas. This contravened the Rural Development Act of 1972 that requires USDA facilities to be located in rural areas to the extent possible. I think it is time USDA's rural development mission include rural Americans and locating USDA facilities in rural areas would be one place to start.

As you know, Mr. Chairman, a word of caution about telecommunications legislation was brought out at our own rural development hearings, and I want to emphasize it for the record: We must not encourage bypass of the telephone network already in place in rural America. We must encourage subscribers to stay on the system that has been built through the hardwork and initiative of our small, rural private and cooperative phone companies.

Once again, Mr. Chairman, I appreciate your time and your interest and look forward to working with you in any way I can. Thank you.

Mr. **Wise**. Thank you, Tom.

As I say, we look forward to work with you on this telecommunications issue.

Congressman Cooper, I just might like to point out, as a 100 percent record in front of this subcommittee. The last time he appeared, he brought warnings of the increasing problems with AOS operations. It was what, 2 weeks ago, that you passed your bill on the floor. That is why I am so optimistic, Jim, and why we wanted to get you here so much, because we knew that if you came and testified, we could move a rural telecommunications bill. So, it is good to have you here.

STATEMENT OF HON. JIM COOPER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE

Mr. **Cooper**. I thank the Chair and I appreciate your help with H.R. 971, which has already passed the House, as you pointed out, and as soon as our colleagues in the Senate see fit to pass it, it will begin helping people all over America, both in rural and urban areas who are subjected to price gouging by some unscrupulous alternative operator service providers.

Mr. Chairman, I feel that the bottom line of today's hearing is this. Our goal is try to make distance completely irrelevant. That is the promise of the information age and the technological future but there are many obstacles in our path. I feel that we need to do all that we can both to remove those obstacles and where appropriate impose reasonable subsidies to make sure that such technologies as satellite technology, optic fiber, and digital switching are in place as quickly as possible, not just in our urban areas but all over America.

As several of my colleagues have pointed out, the only reason today and let me repeat the only reason today rural America has so-called universal telephone service or universal electricity is due to affirmative Federal Government policies that mandated that this would be the case. The private market left to its own devices would still not serve much of America and even with a mandate from the Federal Government we still have some shortages whereas the national universal coverage rate for telephones is something like 93 or 95 percent, in my district it's still only like 85, 87 percent, double the national average and that is when we have had an affirmative Federal policy in place, so we are going to have to realize that this is a tough issue to tackle but it is nonetheless a very worthwhile one.

Let me point out a couple of general guidelines or perceptions that I have about the overall topic.

First of all, we need to realize that when we are talking about telecommunication services, it is hard to realize that TV broadcasters, radio disc jockeys, telephone operators, the handshake signal from a mainframe computer are all in the same business, as is your burglar alarm, as is your—all manner of devices, perhaps even your toaster one day is going to be hooked up to the telecommunications system when you have an intelligent home.

We are used today of thinking of these as separate industries when really they are just fragments of one larger machine that has yet to be sold or marketed.

Another perception is this. We need to define in our own minds what is good enough for rural America, because too often we have taken second place really just due to our own assumptions. Let me give you some illustrations.

For most of us most of the time we have settled for leftovers from the table of urban America and that's been good enough for us—for example, receiving weak broadcast television signals. For most of my life I grew up thinking that snow was commonplace on television even in the summertime because I lived 50 miles from the nearest broadcast antenna.

In some cases we have been able to do a little bit better. The advent of rural cable at least in the early days helped us. Since deregulation of cable, however, no new systems have been installed in my district and all we have seen are the prices go up and service go down, but in some cases we benefited from warm leftovers—for example, cellular telephones. Now at long last the Federal Communications Commission has seen fit to hold the lottery so that it will be permissible for people to bid on cellular franchises in our area. In this case the private market might have been ahead of government action if we had allowed the private market to act but so often in industrial recruitment their cellular telephone stops working before they get to my district. That discourages them from venturing outside the range of their normal communications device.

In some areas of telecommunications we have done better than leftovers or even warm leftovers. In some areas we have had virtually equal and simultaneous service, for example, fax machines or 1-800 numbers have allowed rural marketers and rural information service providers to compete more or less equally because we had universal telephone service already in place and these were just improvements on the existing telephone service.

There have been some cases for the more ambitious rural citizens where we have done even better than our urban counterparts and we shouldn't forget these as examples because sometimes we haven't just settled for leftovers, we have eaten first, and sometimes we have eaten a little bit better than our urban counterparts.

A good example of eating first would be the satellite dish phenomenon. So many urban zoning restrictions and building restrictions made it impossible to put a dish on your roof, whereas our farmers and even some of the manufacturer home owners in my district have had dishes in their yards and have benefited tremendously from the improved access to programming they have been able to receive.

A good example of eating better would be the example of the cross subsidy that rural telephone operators have benefited from so many years because we have had a cost advantage in enjoying our rural telephone service.

Too many of our discussions avoid making these policy assumptions explicit. I would urge us in our consideration to make it clear whether we are going to settle for leftovers or whether we want equal treatment or whether in a few cases better treatment might be technologically appropriate, as with the satellite dish case, because it is easier and cheaper to deliver that signal to us than it is through another means.

There are several other areas we need to discuss. We are still working on improving the FCC's attitude towards rural issues. Too long they have given us lip service but little else and it is devastating for us if that Commission has a rural bias.

Mr. Chairman, to return to the bottom line, our goal is to make distance irrelevant. Our goal is to make there no handicap, no disadvantage at living in a rural area. That is the promise of this technology. We need to make sure that that promise comes alive.

For example, today satellite dish owners could be the first Americans positioned to receive high definition television signals and yet there are a thousand obstacles in their path. Technology is not an obstacle. The satellite is not an obstacle. The programming doesn't seem to be an obstacle but our own bureaucratic inertia and the vested interests of other broadcast means seem to be huge obstacles.

Finally, Mr. Chairman, I would like to propose that we organize either separately or in conjunction with the House rural groups a separate rural telecommunications task force really modelled very much along the lines of the rural health care caucus that has already been so effective in protecting rural hospitals, so that we can explore a lot of these issues and achieve some real response.

I applaud you for holding this hearing and I look forward to continuing a thousand percent batting average.

Thank you.

[The prepared statement of Mr. Cooper follows:]

STATEMENT OF CONGRESSMAN JIM COOPER

HEARINGS BEFORE THE

GOVERNMENT OPERATIONS COMMITTEE

SUBCOMMITTEE ON INFORMATION, JUSTICE AND AGRICULTURE

OCTOBER 12, 1989

Mr. Chairman, I am very grateful to you for giving me this opportunity to testify on rural economic development and telecommunications. This is a topic that you and I have discussed before, and I share your keen interest in the great potential for economic growth that advancements in telecommunications offer to rural America.

I know what the bottom line of this topic is: that the new age of telecommunications should make distance irrelevant. No longer will it matter how close your home is to your office. No longer will it be important to live in the city. No longer will rural folks miss out on business opportunities, good television and movies. And no longer will we have distance as an obstacle to our economic expansion in rural America. No longer, that is, if we can foster responsible federal policies to promote fiber optic cable, digital switch deployment and satellite transmission in rural America.

Our challenge is discovering the best federal policies to push, and to plan how to achieve them. Before we get to that discussion, I'd like to describe very briefly how I see the current status of rural telecommunications and how we got where we are today. For most of the history of telecommunications in this country, rural folks have been playing "catch-up ball." It has taken a firm federal policy to ensure that everyone in this country could use the telephone or watch television. Rural America simply didn't have the population density to support the cost of telephone service, so REA funding and a policy of universal service finally linked us to the network. The job still isn't done. While the national telephone penetration is in the range of 93%, in my congressional district it is more like 85%. And rural America still doesn't have cellular telephone service, at least my district doesn't.

On the television side, we've never fully "caught up." Broadcasting has never served our interests completely, due to distance limitations and mountains. I'm probably the only member of the House Telecommunications Subcommittee without a single television broadcaster as a constituent. My district is served by stations in Nashville, Knoxville, Chattanooga, Bristol and Huntsville, Alabama. Most of my district can get three television broadcast signals -- though they are often snowy. A few small towns in my district are served by cable television, but their systems were built years ago when cable cared about small towns. With deregulation of cable television, I've seen no new system built. I've only heard of higher rates and poorer service. There has been little, if any, effort to expand the reach of rural systems. Many rural Americans finally took matters into their own hands and purchased satellite dishes so that they could get good television access. But lack of proper federal policy has enabled monopoly cable television programmers to hamper their access to many programs.

I look at this situation, and on one level I'm proud of the progress we have made. On the other, I see how far behind we still are, and I get frustrated that we can't move ahead faster. I'm encouraged when colleagues like you, Mr. Chairman, and my colleagues at the witness table see the importance of telecommunications for the future economic health of rural America. But changes are happening every day that could leave us in the dust if we don't aggressively pursue sound federal telecommunications policy.

How should we approach the problem of coping with the rapid changes in telecommunications that are already occurring and at the same time create new potential for future growth?

The first step is to realize that when we try to cope with and shape the availability of these services, we are not dealing with a variety of different industries, but the same industry. It is hard to believe that tv broadcasters, radio disc jockeys, telephone operators, and the handshake signal of a main frame computer are all in the same line of work, but they are. Your tv, your radio, your telephone, your burglar alarm, and your computer are all fragments of a future telecommunications device. The providers of these machines are also competitors, or should be, just as your bank, savings and loan, credit union, insuror, realtor, department store, pawn shop, finance company auto dealer, and brokerage house are all competitors in the provision of financial services. We're going to have to make it in the economic interest of the competitors to serve our areas, and that has been the challenge of policy makers for decades. We must do a better and better job in our policy-making to deal with these competitors and telecommunications issues in general in a comprehensive way. One major example is the need to address cable-telco crossownership issues within the debate of whether to lift the restrictions of the Judge Greene's Modified Final Judgment from the local Bell Operating Companies. The integration of these policies is critical to the overall goal of getting "fiber to the home" in rural America.

Once we realize the impact and interconnectedness of the telecommunications world, a good second step is to define what we mean by successful adjustment to the telecommunications revolution. For some people, this means getting leftovers from the table of urban consumers, much as we used to receive weak tv signals in rural areas from nearby cities before we had cable. For others, warm leftovers is the goal, just as they are content to receive rural cellular service a few years after their urban friends. For the more ambitious, a seat at the table is demanded so that rural areas can receive equal and simultaneous service. Here, fax machines and 1-800 numbers come to mind. For the more ambitious still, a preference for rural residents is demanded. Not only do these people want a seat at the table, they want to eat first or at least better. A good example of eating first is the satellite dish phenomenon. Eating better is like the cross-subsidy that rural telephone customers enjoyed before access charges went into effect.

Too many discussions of rural telecommunications policy avoid making these goals explicit. The usual tacit assumption is that rural customers get leftovers because the areas with higher population densities are served first. This is basically the old economies of scale argument, and it may not be apt when satellite or microwave technologies are involved. Unlike when copper wire had to be strung to every home, there is no per unit cost to the reception of a transponder signal. Obviously, my preference in any a broad, comprehensive telecommunications policy to ensure that rural America is at least sitting at the table. It will certainly be in our interest to create political obstacles for those who would have us eat crumbs.

Step three is to realize that telecommunications is probably neutral, at least in the long run, to different parts of a rich industrialized nation like ours. Like the interstate highway system, it's no big deal to be on an interstate once everyone is close to one. And there appears to be no preferred location on a telecommunications network, since electrons do not run on gasoline. Of course, there can be great inequities during the time that the telecommunications system is being installed. You don't want to be the last to be located on an electronic highway. But declining costs of fiber optic manufacture and installation would seem to accelerate the availability of advanced communications to the latecomers. Highway costs increased, not decreased, over time. Many have heralded telecommunications advanced by saying that many people and jobs will move to the country once they don't have to stay in the city.

But telecommunications is a two-way street, and jobs can also migrate to cities. My guess is that telecommunications will reinforce the move to the suburbs because so many people like a compromise between urban and rural life. The real winner would seem to be the beautiful, low-cost, crime-free, temperate, accessible, and cultural areas of the world, if any such places exist.

Not only it telecommunications likely to be neutral in regard to location, it is distressingly neutral in regard to content. Just because you can call China long-distance doesn't mean that you have anything worthwhile to say. The old phrase that a lie can get half-way around the world before truth can get its boots on may be truer than ever. And the abuse of telecommunications can take commercial form. Junk mail has grown up into junk phone calls and junk faxes.

Step four is to realize our options and limitation for restructuring the telecommunications business. The breakup of AT&T was in response to one of the most popular, and one of the least understood, laws ever passed by Congress, the anti-trust laws. The breakup itself has been extremely controversial and unpopular. Now the fragments of AT&T, the Bell Operating Companies, want to broaden their powers beyond what the judge in the breakup case has allowed them. The Bells have asked permission to do everything except buy up their small, rural independent neighbors. Arguments about competition, monopoly, enhanced services, jurisdiction, and deep pockets have been made, not so much because anyone really knows whether they are right, but because it it convenient to make the argument.

Another important limitation has been focusing the Federal Communications Commission's attention on the concerns of rural folks, whether it be in their efforts to set up a new system of regulation on monopoly telephone companies or in their policies relating to satellite dish owners. Unfortunately, too much of the time the FCC takes rural issues lightly, so I have worked with my colleagues on the Telecommunications Subcommittee to get the Commission to give more weight to rural concerns. The FCC is the worst possible place to have an urban bias.

Mr. Chairman, to get to my bottom line again. Our challenge is to advance legislation to promote rural economic development through telecommunications. Let's be ready to justify the subsidies required and not be bashful about their importance. Let's shore up and update our historic policies that telecommunications services should be universally available at affordable prices. Let's stand united against any efforts to neutralize or minimize advantages, such as satellite dish penetration, that may have evolved. (Satellite dish owners could be the first Americans positioned to receive high definition television, and federal policies shouldn't hold them back.)

Finally, I'd like to propose that we organize our forces into a Rural Telecommunications Taskforce to speak with one forceful voice on these issues and to undergird legislative proposals for a new rural telecommunications policy.

I applaud you for focusing our attention more closely on the issues of rural development, and I'd be delighted to answer any questions you might have.

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Mr. **Wise**. Thank you and I think that's an excellent idea. Sign me up for the task force.

I would just like to note I agree with everything you say. You put things in perspective, particularly about leftovers and then eating first. I'd just observe that some of my neighbors have satellite dishes. They may have been eating first, but someone came in and jerked the plate away real quickly on them.

Mr. **Cooper**. Good point.

Mr. **Wise**. We are joined also by Chairman English, former chairman of this subcommittee and now chairman of the subcommittee that is going to have ultimate legislative jurisdiction over rural development, particularly of this aspect that we are considering today.

Glenn, good to have you here.

If we could, before we vote, the last witness is someone that I think can be very, very helpful not only as the newest member of this subcommittee but also as someone who has worked with REA in the State of Wyoming in his previous life, Representative Craig Thomas.

Craig.

Let me just say we will be breaking up to vote. If you choose to come back, I would be glad to get into some discussion. If not, we understand, and we will move to the next panels.

Thank you very much for coming, Craig.

Mr. **Thomas**. Would you like to go ahead now, Mr. Chairman?

Mr. **Wise**. Well, were you coming back, Craig?

Mr. **Thomas**. Yes, sir, I will come back.

Mr. **Wise**. If you were going to come back anyhow, what we could do is just convene you and anyone else who comes back.

Mr. **Thomas**. I would feel more important that way.

Mr. **Wise**. OK.

[Recess taken.]

Mr. **Wise**. The subcommittee hearing will come back into session. Due to his expertise and being a member of the subcommittee, we have convened a special panel for the Representative from Wyoming, whom we are privileged to have join us, Craig Thomas.

Craig, welcome.

STATEMENT OF HON. CRAIG THOMAS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Mr. **Thomas**. Thank you very much, Mr. Chairman.

There is disadvantage to this. We have built up this great anticipation.

In any event, I do thank you very much for the opportunity to discuss this issue, and I look forward to dealing with it as a member of the Committee.

Wyoming, of course, is a very rural area. In fact, almost all of Wyoming would be considered rural by most criteria. We also have very long distances, which adds to the problem, and low density. As you mentioned, I was manager of the Rural Electric Association and, also, manager of the Wyoming Rural Telecommunications Program, which we began a couple of years ago. I think our density in Wyoming for electric was about 5 per mile, so it is really very low.

Economic development, of course, in its broad sense, is very important to us. Our economy was largely related to the oil business, and since the first of the 1980's, we have been involved in general rural economic development, some of which has been successful. Other efforts have been less successful. So, communications, obviously, is a very important part of that, and even though I am interested in the broad aspect, Mr. Chairman, it is my understanding that your particular interest will be in the telecommunications, so I will comment only on that.

The first proposition—and these are general, certainly—first proposition is that it seems to me we should set a goal and that the real issue before the government, in most cases, is to set an environment in which the private sector can function. After all, our experience has been and our success in this country has been, generally, through the efforts of the private sector, and in that, I include, the rural electrics and the rural telephone cooperatives, as well.

There is a need. Telecommunications, I think, in structure, is much like a utility, and indeed, may be a utility. It is often a function of revenue, and the efforts are placed, generally, where the revenues, the likely revenues, the potential revenues will be. Even though I generally favor deregulation, in a rural area like ours, we normally suffer. Deregulation causes resources to move the high revenues.

The information business, of course, is one that we are seeking, as is true in most rural areas, to diversify our economy, and we need the communications to do that, as well as the services, the medical, the educational, and the commercial areas.

Generally, it seems to me, that in a rural area, we are going to have a better opportunity and more likely to have investment in these kinds of facilities if it is going to be done through the existing telephone companies, and I am happy to say that in Wyoming, there has been substantial investment. There has been substantial investment in upgrading the communications system. I am pleased that the telephone companies, generally, U.S. West, has chosen to put the investment in in anticipation of some increase in the economy, as opposed to taking the other view, which would say whenever the economy increases, we will put in the money. So, they have put in substantial dollars and anticipate putting in additional substantial dollars.

There are needs in which they are dealing for educational improvements, fiber optics, medical, hearing-impaired, general information, and it seems to me, specifically, that there may have to be some changes made in the MFJ that limit the telephone companies, and I would suggest that one of the areas that we need to look at is making some changes in that MFJ. I am not suggesting that all of them need to be made, such as the manufacturing, but there are some that I think need to be made, and there will be greater opportunity to have those kinds of investments, I think, if those companies, where they have capital, can get hold of capital, are able to do that.

The independent companies we have—those rural electric financed independent companies, as well, and they have done an excellent job, in Wyoming.

In the satellite area—I have been involved in the satellite area. It seems to be one that, at least in the immediate future, holds best promise.

Cable TV, I am sure, has certain limitations, they way it is now structured. You simply cannot build facilities into an area where you do not have enough density to return the revenues, and I must tell you that I do not think that there is anything much that the government can do about that if you are going to do it in the private sector and you need a return on your dough.

So, we have, I think, seen the satellite industry strengthen over the last couple of years. When I first got involved, at least in our area, there was some lack of service. There was some lack of dependability on the part of service people. I think that has substantially changed. There needs, of course, to be common equipment so that the purchaser is able to use his equipment for some time, and dependable service.

The fact is, in my experience, that most rural people, at this time, are interested in entertainment. That is the kind of TV they want. There are many other things you can do with it—security, bookkeeping, banking, whatever—that is very likely, but in my experience, most people are not willing to pay for that, and what they really want is entertainment.

The problem we have had is being able to have third-party programmers get into the field and be able to offer entertainment at a price that is consistent and somewhere at least competitive with cable TV. We paid considerably more for the same programs to put into—there are cable systems in Wyoming that have 100 subscribers. We had several thousand, but we paid quite more for the same programming than the cables did, and much of it, of course, is because the cable systems, are in the programming business, and that is an area that you have looked at, I know, Mr. Chairman, and we need to continue to do that.

I think the rural electrics have done an excellent job in terms of trying to bring the satellite television to rural areas. The rural electric cooperatives were the ones that actually did the work.

We did a substantial amount with education, as well, providing some satellite equipment for rural schools. That is relatively easy. Having a curriculum that is available to use is something else. That needs to be available, of course, to fit into the rural schools.

University of Wyoming—we only have one 4-year university in our State, in a State with 100,000 square miles, so you can imagine that doing extension work from the university is very important to us. Flying professors about is expensive, and so, there are some real opportunities right in our State to provide for the university to be able to expand there.

It seems to me, as we move about it, we do not need any more additional departments. We do not need additional bureaucracy. What we do need is coordination among the agencies that are in the field.

Chairman English was telling me about the amount of money that has been available, resources available in rural development, which is extensive, if we can bring that to bear and to focus a little more directly on what we think the problems are.

We tend, I believe, in economic development, to talk largely in clichés. We talk about economic development, but we really need to single down to some specific things that we can zero in on.

So, I hope that, perhaps, some reorganization of the agencies involved might be helpful. I think the rural electrics can be a very useful tool. They are in the country, for the most part. They have involvement of local people. However, if we are going to use utilities to be a prime mover in the area of rural development, we have to also consider, those areas that are not served by rural electrics and that are, in fact, served by investor-owned utilities.

I guess I would have to say that I am not quite as pessimistic as some of the others on the panel. I think we have made some substantial progress in Wyoming in the rural areas. We need to do more, but we do have a sound telephone system. We do have satellite services there for people who want to buy into that, and we have a good base, I think, upon which to grow.

So, I am pleased, Mr. Chairman, that you are undertaking this effort of rural telecommunications, and I would like to assist in any way that I can.

Mr. **Wise**. I appreciate very much your involvement. As I say, having your background on the subcommittee, I think, can be very, very helpful.

Let me turn and see whether Glenn has any questions or thoughts.

Mr. **English**. No, I do not.

Mr. **Wise**. On that point then we very much appreciate your testimony, Craig, and would invite you, since you are a member of the subcommittee also—actually, if you would like to come up here and ask yourself any questions——

[Laughter.]

Mr. **Wise** [continuing]. You are welcome to do that.

Mr. **Thomas**. Thank you.

Mr. **Wise**. At this time I would like to call the second panel. We are delighted to have with us today from the U.S. Department of Agriculture the Honorable Jonathan Kislak, the Deputy Under Secretary for Small Community and Rural Development; the Honorable Jack Van Mark, Acting Administrator for the Rural Electrification Administration; and the Honorable Neal Sox Johnson, Acting Administrator of the Farmers Home Administration and it is my understand you will be joined by others.

Please take your places at the table.

As the panel is seated, I want to express my appreciation for your coming and let me just explain a little further than in August the Senate passed Senate bill 1036, which is a broad rural development package and in it there are certain aspects concerning rural telecommunications.

The Agriculture Subcommittee on Conservation, Credit, and Rural Development, chaired by my colleague on the left, Glenn English, is formulating a bill of similar scope for the House. Glenn has kindly consented to have this subcommittee work with him in drafting the telecommunications portion of that legislation, so we are trying to work together. Just as we are trying to end duplication in some areas of rural America, so we are in rural development in authorizing legislation.

That is why it is important to continue the examination of the best ways to make the new telecommunications technologies available throughout the country.

To help the subcommittee sharpen their perspective, we've asked you gentlemen to come before us to give us your views. I'd particularly appreciate your reactions—and incidentally your statements, your written statements, will be made a part of the record so they are already in there and you may feel free to summarize, but I'd also appreciate your reactions to Senate bill 1036, particularly those provisions dealing with rural telecommunications. It seems to broaden the REA.

I have some questions at the end of your testimony dealing with the extent to which perhaps we ought to be looking at other aspects, other agencies of the USDA, the role that Farmers Home might play for instance, the role that others might play in the rural telecommunications area, so we welcome your testimony and look forward to hearing from you.

As I say, if you have other officials that you want to be included in this, please feel free to pull your chairs up to the table. I am a big believer that you just bring everybody under the tent and put them around a table and let them talk.

Also we have a practice in this subcommittee that in order to prejudice no witnesses who may appear before the committee at any time either now or in the future that we swear in all witnesses.

Do you have any objections to that?

[No response.]

Mr. WISE. If you'd stand, anyone who may be participating, if you would stand and raise your right hand.

[Witnesses sworn.]

Mr. WISE. Mr. Kislak, would you like to start as Deputy Under Secretary?

STATEMENT OF JONATHAN I. KISLAK, DEPUTY UNDER SECRETARY, SMALL COMMUNITY AND RURAL DEVELOPMENT, ACCOMPANIED BY JACK VAN MARK, ACTING ADMINISTRATOR, RURAL ELECTRIFICATION ADMINISTRATION; AND NEAL SOX JOHNSON, ACTING ADMINISTRATOR, FARMERS HOME ADMINISTRATION

Mr. KISLAK. Yes, sir, Mr. Chairman. Thank you for this opportunity to address you and the members of the subcommittee. I am pleased to be here today to discuss the Department of Agriculture telecommunication programs.

With me this morning are Jack Van Mark, the Acting Administrator of Rural Electrification Administration and Sox Johnson, the Acting Administrator of the Farmers Home Administration.

First, I would like to dispel any notion that the Nation's rural telecommunication system is either nonexistent or antiquated and in need of major renovation. In many important respects the Nation's rural telephone system is more state-of-the-art than the national system as a whole. This is due in large measure to the success of the Rural Electrification Administration.

The REA has been making loans to rural telephone companies since 1950 and continues today to make direct loans as well as loans through the Rural Telephone Bank for the establishment, operation expansion, and maintenance of much of the Nation's rural telephone system.

Consider the following figures. Today 96 percent of the Nation's rural residents have reliable telephone service. Many of these rural areas are served with modern digital technology. REA has financed nearly 5,000 host and remote telephone switches nationwide and in many areas the rural telephone companies are well ahead of national providers in the installation and use of modern technology.

Through December 1988, the REA had loaned over $140 million to install 4,200 miles of fiber optic cable and related terminal equipment. In 1989 alone loans totalling more than $21 million for an additional 1,175 miles of fiber optic cable and related facilities were approved.

In other activities the REA has made loans to rural telephone companies, specifically to provide fiber optic facilities for educational television systems for rural schools. In 1989 eight loans totalling $2.5 million were made in Kansas, Oklahoma, Minnesota, and Pennsylvania to install this advanced technology, two-way interactive, real time, digital video learning systems.

REA also makes loans for mobile communication systems and has provided financing for improved mobile telephone services to qualified borrowers since the late 1960's.

In addition, while REA can make loans for cellular telephone systems, the current trend seems to be for REA borrowers to form subsidiaries or joint ventures or partnerships with non-REA financing through which they enter the cellular market. In these cases the REA has granted lien accommodations to these borrowers so that they can obtain funding from other sources.

REA also finances basic exchange telephone radio systems, which are radio telephone system that hold considerable promise in providing telephone service to extremely remote areas at very reasonable costs. These systems have been financed in Alaska and Kansas, in Minnesota, Montana, Oregon, and Texas.

Farmers Home has a relatively limited role with telecommunication. There is one program that could be used to finance telecommunications facilities although to date it has note been used for that purpose.

The Community Facilities Loan Program makes loans generally to public bodies and not-for-profit organizations. These loans are generally used to construct or enlarge improved community facilities for health care, public safety, and public service. It could be used to finance the installation of satellite receiving dishes for communications and educational purposes.

In closing, I want to emphasize one fact of USDA and more specifically, Mr. Chairman, the Rural Electrical Administration role with regard to telecommunications in rural America. The REA is a bank. It has expertise in rural telephone and rural electric service. It is based here in Washington and it specializes in loans to telephone companies and electrical cooperatives for the provision of those services in rural America. It has and continues to perform that function well and efficiently.

I appreciate the opportunity to make these remarks and would be pleased to answer any questions of the committee.

[The prepared statement of Mr. Kislak follows:]

TESTIMONY

of

Jonathan I. Kislak
Deputy Under Secretary
Small Community & Rural Development

Before
The House Government Operations
Sub-Committee on Government Information,
Justice and Agriculture

Thursday 12 October 1989

Good morning Mr. Chairman and members of the Committee. I am pleased to be here today to discuss the Department of Agriculture's telecommunications programs. With me this morning are Mr. Jack Van Mark, Acting Administrator of the Rural Electrification Administration and Mr. "Sox" Johnson, Acting Administrator of the Farmers Home Administration.

First, I would like to dispel any notion that the nation's rural telecommunications system is either non existent or antiquated and in need of major renovation. In many important respects, the nation's rural telephone system is much more "state-of-the-art" than the national system as a whole. This is due in large measure to the activities of the Rural Electrification Administration. The Rural Electrification Administration has been making loans to rural telephone companies since 1950, and continues today to make direct loans, as well as loans through the Rural Telephone Bank, for the establishment, operation, expansion and maintenance of much of the nation's rural telephone system.

Consider the following figures: Today 96 percent of the Nation's rural residents have reliable telephone service, and many of these rural areas are serviced with modern digital technology; to date, REA has financed nearly 5,000 digital host and remote telephone switches nation-wide, and in many areas the rural telephone companies are well ahead of national providers in the installation and use of modern technology; through December 1988, REA had loaned over $140 million, to install 4,200 miles of fiber optics cable and related terminal equipment; In FY '89 alone, REA made loans totaling more than $21 million, for an additional 1,175 miles of fiber optics cable and related facilities.

In other activities, REA has made loans to rural telephone companies, specifically, to provide fiber optic facilities for educational television [ETV] systems for rural schools. In FY '89, eight loans totaling nearly $2.5 million, were made in Kansas, Oklahoma, Minnesota and Pennsylvania to install these advanced technology two-way interactive real-time digital video learning systems.

REA also makes loans for mobile communications systems and has provided financing for Improved Mobile Telephone Services [IMTS] to qualified borrowers since the late 1960's. In addition, while REA can make loans for cellular telephone systems, the current trend seems to be for REA telephone borrowers to form subsidiaries, joint ventures and partnerships, with non-REA financing, through which to enter the cellular market. In these cases REA may and has granted lien accommodations to borrowers so they can obtain funds from other financial institutions.

REA also finances Basic Exchange Telephone Radio Systems [BETRS], which are radio telephone systems that hold considerable promise in providing telephone service to extremely remote areas at a very reasonable cost. BETRS systems have been financed in Alaska, Kansas, Minnesota, Montana, Oregon and Texas.

The Farmers Home Administration has a very limited role with regard to telecommunication.

Within the Farmers Home Administration there is one program that could be used to finance certain telecommunications facilities, although to date it has not been used solely for that purpose. The Farmers Home Administration Community Facilities Loan Program makes loans to public bodies and non-profit corporations. These loans are generally used to construct, enlarge or improve community facilities for health care, public safety and public services. This program could be used to finance the installation of satellite receiving dishes to be used for communications and educational purposes.

In closing, I want to emphasize one aspect of the USDA's, and more specifically the Rural Electrification Administration's, role with regard to telecommunications in rural America. The Rural Electrification Administration is a bank. With no expertise in matters other than those related rural telephone and electric service, REA truly is a Washington, DC based lending institution that specializes in making loans to rural telephone companies and rural electric cooperatives for the provision of those respective services to rural Americans. In that respect, REA has, and continues to perform its mission well and efficiently.

Thank you for this opportunity to make these remarks. We would be pleased to answer any questions you may have.

Mr. **Wise**. Thank you very much. Did either of the other two gentlemen wish to make any statement?

Mr. **Van Mark**. Could I offer——

Mr. **Wise**. Sure.

Mr. **Van Mark**. We talked about the 5,000 remote and host switches. I think the Under Secretary meant to say 5,000 digital telephone host and remote switches. I think that is important because it is the cutting edge of technology.

Mr. **Wise**. I would like to go to the last part of your statement first.

When you said, you pointed out I thought quite emphatically that the REA is a bank with its expertise basically in Washington, did I read in that that you weren't looking for any great expanded role in REA, or that you were not recommending that? As you know, the bill that's passed the Senate would seem to expand the role of REA in rural telecommunications.

Mr. **Kislak**. Mr. Chairman, I think in rural communications that REA does have a role to play. I think to expand the REA into areas beyond its current expertise and areas that are well served by Farmers Home and in other areas may duplicate programs and services that are well provided elsewhere in the government.

Mr. **Wise**. That's an important point and one that this subcommittee wants to get into.

Could you expand on that? In specifically what areas do you think that Farmers Home is taking, is serving now and that REA would not need to get into in the rural telecommunications issue, particularly in light of the Leahy bill.

Mr. **Kislak**. Mr. Johnson, maybe you can talk about some of the community facilities programs and rural development programs in your agency.

Mr. **Johnson**. We do not see ourselves as a primary provider in the electric or telephone system field because as we look to our sister agency to be the primary mover in that area. Our agency, I think, in some years past has maybe had some enlarged role that was shifted to REA to avoid duplication.

We see ourselves as more active through our community facility loans and able to assist with educational purposes. Certainly, we can provide onsite or facility-type of equipment in conjunction with telephone and communication systems, satellites, and so forth.

We do have a role there and are participating to some degree. Also, with our business and industrial loan programs, there may be some potential but I don't recall any applications from any communication networks for utilization of that program to help in the cable, satellites, or any of those things. Obviously, that is a program that is available.

I do see those as two different things as they relate to the primary supplier of telecommunications and telephone networks as opposed to what we do as part of a facility.

Mr. **Wise**. Mr. Johnson, as I understand Farmers Home presently, there is nothing to prevent it either through the community facilities loan or you also have a small business loan program too, as I recall, don't you?

Mr. **Johnson**. That's what I am referring to as our business and industrial loan program. It's comparable to SBA or small business type loans.

Mr. **Wise**. I like the way you handle it a lot better than SBA does, but that's a subject for another hearing and another committee, I guess.

Mr. **Kislak**. We appreciate the vote, Congressman.

Mr. **Wise**. But my question is, there is nothing to prevent you from assisting in the development of rural telecommunications, for instance in the—if businesses wanted to go into an incubator or if businesses wanted to develop and increase telecommunications capacity in a rural area, that is something that you could already provide, I would think.

Mr. **Johnson**. Yes, within the purposes and to the type entities we deal with. The business and industrial loans are for the for-profit types. Those are guaranteed loans only, so, obviously, if there was some for-profit organization that wanted to get into cable or set up a satellite distribution center or something like that, they could possibly fit in with our business and industrial loans.

As for public entities and not-for-profit organizations, we try to limit our assistance to the facility in which we make loans for educational buildings, and other essential community facility type buildings that may happen to be for educational purposes. The organizations may want to incorporate later technology that would tie on to a bigger service, so we could make loans for those purposes.

Mr. **Kislak**. Let me add, Mr. Chairman, that Farmers Home also is very active in making loans to public bodies and not-for-profit organizations for water and sewage treatment, water distribution and for sewage treatment and that is an active part of the Farmers Home community facilities program.

Mr. **Wise**. I found—my observation of Farmers Home coming from a rural area is that ever since revenue sharing went down the tubes, yours is about the only show in town and so I try to make great use of Farmers Home.

As part of a facility, a community facility, would telecommunications terminal equipment count? Could I apply for a loan in that regard?

Mr. **Johnson**. For educational purposes, yes, as long as it is a part of that facility.

Mr. **Wise**. There is a provision in H.R. 5, the Education Improvement Act, which the President signed last year, for certain programs that could foster greater telecommunications links, satellite link-ups, and so on. Now, can Farmers Home also be involved in that?

Mr. **Johnson**. I do not know.

Mr. **Wise**. That program is administered, of course, by the Department of Education.

Mr. **Johnson**. We would have to look. We would be happy to look and provide that for the record.

Mr. **Wise**. Under the community facilities part of what you do.

Mr. **Johnson**. I am just not sure. We will be happy to look into that issue and respond.

Mr. **Wise**. Everything that we have been talking about in our conversation has been dealing with loans, as I understand it. Is that correct? Not grants.

Mr. **Johnson**. That is correct. We have no grant program in the community facility programs. We do have in the sewer and water programs, but not in the essential community facility program.

Mr. **Wise**. Are those loans in the community facilities program, are they lower rate than the market rate?

Mr. **Johnson**. Yes, we have three rates based on income of the community. So there is some interest subsidy involved in those programs.

Mr. **Wise**. I have some other questions, but I am going to wait until another round, and turn to my colleague, Mr. Thomas.

Mr. **Thomas**. Thank you, Mr. Chairman.

Where would one go to find a coordinating point for USDA on rural area development?

Mr. **Kislak**. The Undersecretary. The Undersecretary's office is responsible for rural development, reporting to my boss.

Mr. **Thomas**. Does he have jurisdiction over all of the agencies that are involved?

Mr. **Kislak**. No, sir.

Mr. **Thomas**. What do you think of what I heard in the GAO report, that there are many, many agencies involved, some of which, perhaps, could use a little coordination? How would you react to that?

Mr. **Kislak**. Mr. Thomas, I think that certainly there is more coordination in order. I am not sure what the best way to achieve it is. There are not only agencies within USDA and, essentially, every agency inside USDA has some rural development aspect to it, but there are a number of programs outside of USDA—the EDA, the Small Business Administration, Department of Transportation, HUD. Just go down the list. Almost every department and agency in the government has some rural development aspect to it.

Mr. **Thomas**. Would you agree, if we could focus all those resources a little more precisely on the problem, that it would be more effective?

Mr. **Kislak**. Yes, sir.

Mr. **Thomas**. Do you have a plan to do that?

Mr. **Kislak**. The Secretary is studying it right now, and I am not at liberty to disclose until the President does. The President ordered, in March, an Economic Policy Committee study, through all of the departments of the government, how best to deal with rural development. This is an important topic for the President. That report is in its final stages of being completed, and I hope that some of the recommendations that come out of that would deal with better coordination of the government efforts.

Mr. **Thomas**. Good. Thank you.

Mr. **Wise**. Jack, the rural electrics, of course, it is very important for a utility to have commercial business. What do you think the role of a local rural electric is to encourage commercial businesses and development in their area? Do you see them having a role?

Mr. **Van Mark**. Of course. However, Congressman, it will vary from community to community. Currently the rural electrics' have the ability to invest funds equal to 15 percent of their plant value in rural development projects without coming to the Administrator for approval. They can go above that on a case-by-case basis with the Administrator's approval.

We did a little calculation to see what that would come to in rural America, and it comes to something like $7 billion that would be available for investment in rural development projects.

Mr. THOMAS. It is fairly difficult for a local board to commit some of their members' money to a risky project, isn't it?

Mr. VAN MARK. One would anticipate that it would require the board action—and the board represents the local coop, so they have to make many difficult decisions.

Mr. THOMAS. I understand. Thank you.

Mr. KISLAK. Congressman, if I could add to that and emphasis what Congressman Skelton said in his statement, the first key to rural economic development is local leadership. Certainly, the board of the coop is one of the places that that is most likely to reside. Whether they, as individuals or as a member of the board of the coop, take the leadership, somebody has to take that first step. Whether it then takes the coop's money to invest or those leaders, either as the board of the coop or as leaders in their community, find other sources of funding, whether it be from Farmers Home or any one of the other programs, I think that, certainly, the first role that the coop can play, without committing its members' cash, is to be the catalyst and the leader in that community.

Mr. THOMAS. Thank you.

Thank you, Mr. Chairman.

Mr. WISE. Thank you.

Chairman English.

Mr. ENGLISH. Mr. Chairman, I have got quite a few questions, so let me know whenever I have exceeded my time.

With regard to that, Mr. Van Mark, the other question that comes to mind is that the REA has a powerful influence, obviously, with regard to all the REC's, with regard to rural telephone cooperatives. What you say is correct. As a result of the 1987 agriculture credit legislation, the REC's can invest 15 percent of their plant value, and you are correct, that would make available some estimated $7 billion for rural development.

The question that comes down is—it has been 2 years now, I suppose, since that legislation passed. What action has the REA taken to encourage REC's to take advantage of that opportunity, and what in the way of guidelines, directives, advisories, how many of those have been issued to the REC's?

Mr. VAN MARK. Well, we have not issued guidelines or advisories or attempted to advise them on how to invest their funds because each local area is unique in itself. What I have done, Congressman, is in almost every presentation that I have made around the country, I have reiterated that they have that investment option. We have sent copies of the regulation implementing the new provision to borrowers. There is no lack of awareness on their part that the investment opportunity is available, and I think that is about the limit.

[The information follows:]

page 58 line 1273

United States Department of Agriculture
Rural Electrification Administration
Office of the Administrator
Washington, D.C. 20250

March 22, 1989

SUBJECT: Authority for REA Electric Borrowers to Invest Funds, Make Loans, or Loan Guarantees

TO: REA Electric Borrowers

At the House of Representatives Subcommittee on Rural Development, Agriculture, and Related Agencies hearing this week, REA was asked to clarify the present authority of borrowers to invest general funds in rural development projects in the absence of final rulemaking on this subject.

As a result of the Omnibus Budget Reconciliation Act of 1987, REA informed borrowers at meetings held in Washington, D.C. in May 1988 that REA considered borrowers were authorized to use their general funds up to 15 percent of Total Utility Plant for investments, loans, or loan guarantees, including investments in rural development projects. This message was published in the May 13, 1988, issue of Rural Electric Newsletter and was repeated by various REA representatives at each of the seven Regional Meetings held during the fall of 1988.

REA published its draft implementing rule for the program entitled 7 CFR Part 1715, "Criteria for Securing REA Approvals Required Under the Mortgage by Electric Borrowers Relating to Financial and Management Matters," on November 28, 1988, and each borrower was provided a copy with our mailing dated December 7, 1988. REA is now completing its final rule and we believe that it will be available in 30 to 45 days. The final rule will exempt certain investments from inclusion in the 15 percent of Total Utility Plant computation.

Meanwhile, we are furnishing this clarification letter as requested at the hearing.

Jack Van Mark
JACK VAN MARK
Acting Administrator

page 58 line 1273

Rural Electrification Administration

7 CFR Part 1715

Criteria for Securing REA Approvals Required Under the Mortgage by Electric Borrowers Relating to Financial and Management Matters

AGENCY: Rural Electrification Administration, USDA.

ACTION: Final rule.

SUMMARY: The Rural Electrification Administration (REA) hereby amends 7 CFR Chapter XVII, by adding a new Part 1715, Criteria for Securing REA Approvals Required Under the Mortgage by Electric Borrowers Relating to Financial and Management Matters consisting of Subpart B, §§ 1715.20-1715.28, Investments, Loans and Guarantees by Electric Borrowers. The new Part establishes REA policies for borrowers of electric loans made or guaranteed under the Rural Electrification Act of 1936, as amended (7 U.S.C. 901–950b) ("RE Act"). The rule also clarifies the effect of new section 312 of the RE Act concerning provisions in existing REA mortgages and bulletins which would otherwise conflict with this recent amendment. Generally, section 312 of the RE Act authorizes a borrower to make investments, loans and guarantees up to 15 percent of its total utility plant.

EFFECTIVE DATE: July 31, 1989.

FOR FURTHER INFORMATION CONTACT: Robert W. Ford, Chief, Loans and Management Branch, Electric Staff Division, U.S. Department of Agriculture, Rural Electrification Administration, Room 1246–S, 14th & Independence Avenue SW., Washington, DC 20250–1500; Telephone: (202) 382–1932. The Final Regulatory Impact Analysis describing the options considered in developing this rule and the impact of implementing the rule is available on request from the above office.

SUPPLEMENTARY INFORMATION: This rule implements the provisions of section 312 of the RE Act which was enacted as section 1402 of the Omnibus Budget Reconciliation Act of 1987 (OBRA) (Pub. L. 100–203).

This action has been reviewed in conformity with Executive Order 12291, Federal Regulations. Since this rule only defines the requirements of OBRA, it does not: (1) Have an annual effect on the economy of $100 million or more; (2) result in a major increase in costs or prices to consumers, individual industries, Federal, State or local government agencies, or geographic regions; (3) result in significant adverse affects on competition, employment, investment or productivity, and therefore, has been determined to be "not major."

REA has concluded that promulgation of this rule does not represent a major Federal action significantly affecting the quality of the human environment under the National Environmental Policy Act of 1969, as amended, (42 U.S.C. 4321 *et seq.*), and therefore, does not require an environmental impact statement or an environmental assessment. This rule is a categorical exclusion under REA's 7 CFR Part 1794, Environmental Policies and Procedures (*i.e.*, 7 CFR 1794.31(b)(17)).

The reporting and/or recordkeeping requirements contained in these rules have been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). The OMB approval numbers for these requirements are 0572–0032 and 0572–0017.

Public reporting burden for this collection of information is estimated to average one hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, Room 404–W, Washington, DC 20250; and to Office of Management and Budget, Paperwork Reduction Project (OMB #0572–0032 and 0572–0017), Washington, DC 20503.

This action does not fall within the scope of the Regulatory Flexibility Act. This program is listed in the Catalog of Federal Domestic Assistance under No. 10.850, Rural Electrification Loans and Loan Guarantees. For the reasons set forth in the Final Rule related Notice to 7 CFR Part 3015, Subpart V in 50 FR 47034, November 14, 1985, this program is excluded from the scope of Executive Order 12372 which requires intergovernmental consultation with State and local officials.

Background

On December 22, 1987, Section 312, Use of Funds, was added to the RE Act. Congress expressed concern that REA borrowers were restricted in their ability to make needed investments in rural community infrastructure projects (such as water and waste systems, garbage collection services, etc.) and in job creation activities (such as providing technical, financial, managerial assistance) and other activities to promote business development in rural communities. By section 312, Congress directed REA to replace its traditional 3 percent policy with a 15 percent limit as a small incremental contribution to rebuilding a more diversified economy in rural communities. The legislative history surrounding the enactment of section 312 is clear that Congress intended that the new permitted level of investments should not in any way put government funds at risk or impair a borrower's ability to repay its indebtedness.

On November 28, 1988, REA published a proposed rule in 53 FR 47830 to amend 7 CFR Chapter XVII by adding a new Part 1715, Criteria for Securing REA Approvals Required Under the Mortgage by Electric Borrowers Relating to Financial and Management Matters consisting of Subpart B, §§ 1715.20-1715.28, Investments, Loans and Guarantees by Electric Borrowers. REA invited interested parties to file comments on or before January 27, 1989.

Comments

REA received 7 written comments from the following:

(1) National Rural Electric Cooperative Association
(2) National Rural Utilities Cooperative Finance Corporation
(3) Oglethorpe Power Corporation
(4) Basin Electric Power Cooperative
(5) Garkane Power Association, Inc.
(6) Tri-State Generation and Transmission Association, Inc.
(7) Blue Ridge Electric Corporation

All received comments were considered in preparing the final rule. These comments are addressed in the following paragraphs, along with REA's position on each comment and/or a discussion of REA's modification to the proposed rule.

Three of the seven organizations responding gave unequivocal support to the rule as written.

One comment suggested that REA take an activist role in offering advice to borrowers in investment activities. REA does not believe that the Rural Electrification Act authorizes the agency to act as an investment advisor to its borrowers and REA does not believe that it is appropriate to act in this role. Consequently, responsibility for making investment decisions will remain with the borrowers. REA encourages its borrowers to obtain competent investment advice by using qualified professional staff and by consulting trained investment advisors.

Three comments suggested revising the general rule in order to clarify its meaning or more closely follow what the commentators considered to be the intent of section 312 of the Act. As written, § 1715.23 is intended to constitute the written consent under existing mortgages of REA which require approval for certain investments in excess of 3 percent of a borrower's total utility plant. Accordingly, REA does not believe that individual written consents from REA are necessary for borrowers to be able to invest their own funds, make loans, or guarantees up to 15 percent of their total utility plant. REA believes that § 1715.23, as originally proposed, clearly states a general rule which is consistent with section 312 of the Act. Thus, REA is making no changes in § 1715.23.

One comment from a financial institution objected to REA's statement of policy because section 312 of the Act did not limit the discretion granted to a borrower to invest, make loans, or guarantees only to instances where the activities are directed toward rural development. REA agrees that the language of section 312 omits such limitation but points out that the legislative history of section 312 clearly evidences a congressional intention that borrowers will use their new latitude primarily to stimulate economic development in their own communities. Accordingly, REA believes that it is both authorized and appropriate to adopt a policy statement encouraging borrowers to exercise their broader latitude under section 312 in this manner. However, § 1715.23 of the rule (the section which operates as the written REA consent called for in REA mortgages) omits any reference to investment purposes. Thus, borrowers are encouraged by REA to invest in rural development, but are not required by the rule to do so.

The above commentator also objected to REA's policy that investment activity "not in any way put government * * * security at risk." This commentator interpreted the policy statement as a restriction which would preclude virtually all investment and guarantee activity since REA's security interest typically includes funds used to make investments or funds that would be used to honor a guarantee. REA disagrees with this interpretation. The mere existence of an REA security interest in a borrower's funds will not preclude investment and guarantee activity that is otherwise permissible under § 1715.23 of this subpart. On the other hand, a borrower's obligation to make timely payments on loans made or guaranteed by REA is not excused because of any financial or liquidity problems associated with activities authorized under § 1715.23. The policy statement makes it clear that although REA considers rural development to be a laudable objective, REA affords timely loan repayment and adequate loan security higher priority. REA believes that the policy as proposed is authorized and appropriate when viewed in the context of the legislative history of section 312 and the rule as an entirety. Nevertheless, REA is revising the language of § 1715.21 to clarify that the statement is one of policy and not a legal restriction.

Four of the comments disagreed with various elements of the definitions (§ 1715.22) either because they thought certain definitions contained ambiguities or were overly restrictive. After considering the comments, REA is revising the definition of "invest" by replacing the broad reference to assets, "which are not expected to be used or useful in furnishing electrical service" with the more precise term "and includes all financial transactions recorded on the borrower's books and records in investment accounts, as those accounts are used in the Uniform System of Accounts for REA Borrowers." This provision makes it clear that section 312 is not intended to authorize a borrower to make extensions to its electric system in contravention of REA limitations by characterizing them as "investments."

One commentator also suggested that this definition be revised by eliminating the reference to earning a financial return. REA believes that the expectation of earning a financial return is an integral part of the meaning of the term "invest," and thus is retaining that element of the definition.

Three comments suggested that the definition of "own funds" be changed, each in a different way. One wanted the definition changed to clarify that loan fund proceeds which have been advanced to a borrower (as reimbursement for plant costs temporarily financed by the borrower with general funds) would be considered to be the borrower's "own funds." REA believes the definition is clear that such funds are the borrower's "own funds." Thus, REA believes that no change is needed. This commentator sought a similar modification for each of the other elements in this definition, apparently for clarification. REA believes that the definition as originally proposed is clear.

One comment suggested that the definition of "own funds" be modified to classify "own funds" as any funds which a borrower may receive from sale proceeds which exceed book value. REA thinks that such a definition would be difficult to administer and would create in every case (where a borrower has sold property) a factual question about whether the funds so invested were attributable to the proceeds in excess of book cost. The suggestion would also be inconsistent with REA's long-standing approach of valuing loan collateral on a system-wide basis, as contrasted with a project-by-project or line-by-line basis. REA does not wish in this rule to abandon its established practice of requiring that proceeds from sales of mortgaged property be applied either towards retirement of debt or to system improvements and extensions. Should REA consider changing its policy in this regard, it will do so in a different rule concerning asset sales.

One comment, while admitting that Congress presumably did not intend for borrowers to otherwise invest funds that would be necessary for timely debt repayments, objected to the exclusion of those funds necessary to make timely payments of principal and interest on loans made, guaranteed, or lien accommodated by REA from the definition of "own funds". If this interpretation were chosen, a borrower could invest cash which is necessary to make timely payments of principal and interest on loans made, guaranteed, or lien accommodated by REA. Also, if this interpretation were chosen, a borrower could invest cash necessary to make timely loan repayments in non-liquid, long-term investments causing it to default on its REA mortgage obligations. In such circumstances, REA would be effectively forced to acquiesce in the default or liquidate mortgage collateral, including these investments, at less than the face amount of the debt. REA anticipates that such a borrower might even assert in defense of its conduct, that REA consented to such activity by section 312 of the Act and § 1715.23 of this rule. In support of its position, the commentator cited a statement in the House Report No. 381(I), 100th Cong. 1st Sess. 20) to the effect that investments less than 15 percent of total utility plant should not in any way put government funds or security interest at risk. Apparently, the commentator views the report language as a conclusion. Since the report contained no basis for such a sweeping conclusion, REA interprets the statement to be a directive. Accordingly, REA sees no conflict between the latitude given to borrowers to invest their own funds and an administrative interpretation that when payment is due, funds needed for debt service are no

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longer the borrower's "own funds" as that phrase is used in section 312 of the RE Act.

One comment objected to the definition of "Total Utility Plant" because it is limited to total electric utility plant. Although section 312 uses the term "total utility plant," it does not define the term nor does the legislative history amplify its meaning. However, section 312 is, by its express terms, limited to borrowers of "electric" loans. The overwhelming majority of electric borrowers have no utility plant which is not electric utility plant. Therefore, REA thinks that the reference in section 312 to an electric program borrower's total utility plant means the total electric utility plant of that borrower and has so defined the term. The definition of total utility plant does not restrict borrowers from investing in other utilities if they chose to do so. Thus, for most REA electric progam borrowers, the definition makes no difference. For the limited number of REA program borrowers which operate more than one utility service, this interpretation will preclude such borrowers from leveraging the amount of unrestricted investments they otherwise could make by acquiring controlling interests in other utilities and then including the value of such utilities in the computation of "total utility plant" for the purposes of section 312.

One comment suggested that REA delete the definition of subsidiary and remove the requirement in § 1715.25(b) that subjects the records of borrowers to auditing procedures prescribed in 7 CFR Part 17[illegible]. As defined in this rule, a subsidiary is another organization which the borrower controls. Thus, the borrower is in a position to cause its subsidiary to make records available and to comply with REA accounting requirements. REA considers these requirements to be justifiable in furthering its obligations under the Act to see that loans made or guaranteed by it remain adequately secured and that such loans are repaid in accordance with their terms. The commentator conceded that REA might have such authority under other statutory provisions or agreements but objected to REA's inclusion in this rule as a condition for exercising investment and guarantee authority. However, the records and accounting requirements in § 1715.25(b) do not condition the ability of borrowers to make investments or guarantees under section 312. REA inserted these requirements in this rule at § 1715.25(b) because REA is broadening the scope of its financial monitoring in response to the increased level of investment, loan, and guarantee activity generated by section 312.

REA received a few comments objecting to the exclusions in § 1715.24. Generally these objections were based on two grounds. First, a belief that section 321 prevents the Administrator from changing in any way REA's administrative practices concerning investments, loan and guarantee activities except to make them more permissive than they were when section 312 was enacted. While section 312 and its legislative history show an unmistakable intention to raise the level of unclassified investments, loans and guarantees requiring prior REA approval from 3 percent to 15 percent, the language of section 312 does not impose any limitation on the discretion of the Administrator to restrict such activities when they exceed 15 percent of a borrower's total utility plant. Accordingly, REA does not agree with comments suggesting that section 312 precludes the Administrator from reconsidering whether investments, loans and guarantees that were not subject to REA approval under REA's past administrative practices should be restricted when they exceed 15 percent of a borrower's total utility plant. REA believes that section 312 does not address this issue and thus leaves the Administrator's authority under the RE Act unchanged in this respect. Second, some objections noted that the existing REA mortgages were multiparty agreements and thus in proposing to restrict certain investments that had previously been unrestricted, REA was exceeding its authority under the terms of existing legal agreements, i.e. REA mortgages, by in effect amending them unilaterally. In response to this second argument, REA has modified § 1715.24 to permit borrowers to continue to make investments, loans and guarantees without prior REA approval in circumstances where such approval is not required under their existing REA mortgages.

As a result of the above change, paragraphs (a), (b), and (c) in § 1715.24 which proposed specific uniform exclusions have been limited in the final rule to those instances where REA is making a new loan or guarantee and the co-mortgagees, if any, consent to the modification of the REA mortgage. Those paragraphs have been further modified to limit the exclusion of those investments from the computation only in those instances where the borrower pledges those investments under the REA mortgage. In those limited instances where such assets may not be pledged, e.g., restricted stock, borrowers could still make such investments but they would be subject to the 15 percent restriction expressed in the general rule. Paragraph (d) in § 1715.24 excluding certain commitments incurred prior to the original mortgage has been deleted from the final rule since it is unnecessary in the case of existing mortgages which contain a similar provision and unnecessary for future mortgages since the authorization of 15 percent in section 312 of the RE Act provides ample authority of the very limited number of borrowers that have this type of commitment.

The final rule now clearly permits the continuation of borrower investments in securities of CFC, the National Bank for Cooperatives and the Saint Paul Bank for Cooperatives as excluded investments in determining compliance with § 1715.23 of the rule. The rule also clarifies that permitted exclusions in § 1715.24 are the same as those in a borrower's current mortgage.

REA does not agree with comments suggesting that the passage of section 312 in effect statutorily "froze" existing REA mortgage provisions dealing with this subject. Accordingly, a new paragraph (d) has been added to § 1715.24 to make it clear that REA is not adopting this interpretation. REA is reserving in § 1715.24 its historic right to make case by case revisions in REA mortgages in connection with any new REA financial assistance. To clarify the interaction of the currently existing Mortgage provisions with the requirements of this Rule, an Appendix is included with the Rule to set forth a hypothetical example of how §§ 1715.23 and 1715.24 would apply.

One respondent requested REA to be specific in determining the amount available for investing, if a borrower must include the unrecovered investments (losses on investments and guarantees) in determining its future compliance with the rule. REA accepts the request, and has added a new paragraph (d) to § 1715.25, Records, to clarify this determination to assure that: (1) Losses occurring on an investment will not be counted against the 15 percent in future calculations, and (2) an investment which is "rolled over" is not accumulated or counted against the 15 percent in future calculation, but rather treated as only one investment. This is accomplished by requiring the borrower to use the amounts actually reflected on it books and records for the investments.

The final rule will become effective thirty days after its publication.

List of Subjects in 7 CFR Part 1715

Electric power, Loan programs-energy, Reporting and recordkeeping requirements, Rural areas.

In view of the above, REA hereby amends 7 CFR Chapter XVII by adding a new Part 1715 consisting of Subpart B (§§ 1715.20–1715.28) to read as follows:

PART 1715—CRITERIA FOR SECURING REA APPROVALS REQUIRED UNDER THE MORTGAGE BY ELECTRIC BORROWERS RELATING TO FINANCIAL AND MANAGEMENT MATTERS

Subpart A—[Reserved]

Subpart B—Investments, Loans, and Guarantees by Electric Borrowers

Sec.

1715.20 Purpose.
1715.21 Policy.
1715.22 Definitions.
1715.23 General.
1715.24 Exclusions.
1715.25 Records.
1715.26 Effect of this subpart on REA loan contract and mortgage.
1715.27 Restrictions imposed by other lenders.
1715.28 Investments, loans, and guarantees in excess of 15 percent of Total Utility Plant.

Authority: 7 U.S.C. 901–950b; Title I, Subtitle D, sec. 1402, Omnibus Budget Reconciliation Act of 1987, Pub. L. 100-203; Delegation of Authority by the Sec'y of Agriculture, 7 CFR 2.23; Delegation of Authority by the Under Sec'y for Small Community and Rural Development, 7 CFR 2.72.

Subpart A—[Reserved]

Subpart B—Investments, Loans, and Guarantees by Electric Borrowers

§ 1715.20 Purpose.

This subpart contains the general regulations of the Rural Electrification Administration (REA) for implementing and interpreting the provisions of the Rural Electrification Act of 1936, as amended, including section 312 (7 U.S.C. 901 *et seq.*) (RE Act), permitting, in certain circumstances, that borrowers of insured or guaranteed electric loans under the RE Act may, without restriction or prior approval of the Administrator of REA, invest their own funds and make loans or guarantees.

§ 1715.21 Policy.

REA electric borrowers are encouraged to utilize their own funds to participate in the economic development of rural areas, provided that such activity does not in any way put government funds at risk or impair a borrower's ability to repay its indebtedness to REA and other lenders. In considering whether to make loans, investments, or guarantees, borrowers are expected to act in accordance with prudent business practices and in conformity with the laws of the jurisdictions in which they serve. REA assumes that borrowers will use the latitude afforded them by section 312 of the RE Act primarily to make needed investments in rural community infrastructure projects (such as water and waste systems, garbage collection services, etc.) and in job creation activities (such as providing technical, financial, managerial assistance) and other activities to promote business development and economic diversification in rural communities. Nonetheless, REA believes that borrowers should continue to give primary consideration to safety and liquidity in the management of their funds.

§ 1715.22 Definitions.

As used in this subpart:

"Borrower" means a corporation or other legal entity engaged, or intending to become engaged, in the generation, transmission or distribution of electricity, and whose outstanding obligations resulting from RE Act loans or guarantees are not in default.

"Cash-Construction Fund-Trustee Account" means the account described in the REA Uniform System of Accounts as one to which funds are deposited for financing the construction or purchase of electric facilities.

"Guarantee" means to undertake collaterally to answer for the payment of another's debt or the performance of another's duty, liability, or obligation, including, without limitation, the obligations of subsidiaries. Some examples of such guarantees would include guarantees of payment or collection on a note or other debt instrument (assuring returns on investments); issuing performance bonds or completion bonds; or cosigning leases or other obligations of third parties.

"Invest" means to commit money in order to earn a financial return on assets, including, without limitation, all financial transactions properly recorded on the borrower's books and records in investment accounts as these accounts are used in the Uniform System of Accounts for REA Borrowers.

"Make loans" means to lend out money for temporary use on condition of repayment with interest.

"Mortgaged Property" means any asset of the borrower which is pledged in the REA mortgage.

"Own Funds" means money belonging to the borrower other than: (i) Proceeds of loans made, guaranteed or lien accommodated by REA; (ii) funds necessary to make timely payments of principal and interest on loans made, guaranteed or lien accommodated by REA; (iii) insurance proceeds from mortgaged property; (iv) damage awards and sale proceeds resulting from eminent domain and similar proceedings involving mortgaged property; (v) sale proceeds from mortgaged property sales requiring specific REA approval; and (vi) funds on deposit in the cash construction trustee account.

"REA Mortgage" means any and all instruments creating a lien on or security interest in the borrower's assets in connection with loans or guarantees under the RE Act.

"Sale Proceeds" means all consideration received from the sale of assets after deducting reasonable transaction expenses, if any, and after deducting, in the case of assets taken by power of eminent domain, the amount, if any, of the damage award paid to the borrower as compensation for lost future revenues.

"Subsidiary" means a corporation the majority stock of which is owned or controlled by a borrower.

"Supplemental Lender" means a lender that has provided a supplemental source of financing that is secured by the REA mortgage.

"Total Utility Plant" means the sum of the borrower's "electric plant accounts" and "construction work in progress—electric accounts," as such terms are used in the REA Uniform System of Accounts, for REA Borrowers.

"Uniform System of Accounts for REA Borrowers" means the system of accounts prescribed in 7 CFR Part 1718.

§ 1715.23 General.

A borrower may, without prior written approval of the Administrator, invest its own funds or make loans or guarantees not in excess of 15 percent of its total utility plant without regard to any provision contained in any REA mortgage to the effect that the borrower must obtain prior approval from REA.

§ 1715.24 Exclusions.

(a) In calculating the amount of investments, loans and guarantees permitted under § 1715.23, there is excluded from the computation any investment, loan or guarantee of the type which by the terms of the borrower's REA mortgage the borrower may make in unlimited amounts without REA approval.

(b) Except in instances where the consent of third parties is required and cannot be obtained, REA will require that any electric loan made or guaranteed by REA after July 31, 1989, shall be secured by a mortgage restricting investments, loans and guarantees by the Borrower substantially as follows:

(1) The borrower may, to the extent permitted by 7 CFR 1715.23, invest its own funds or make loans or guarantees not in excess of 15 percent of its total utility plant, as those terms are used in 7 CFR Part 1715, Subpart B.

(2) The borrower may also make unlimited investments, without prior approval of the Administrator, in:

(i) Securities or deposits issued, guaranteed or fully insured as to payment by the United States Government or any agency thereof;

(ii) Capital term certificates, bank stock, or other similar securities of the supplemental lender which have been purchased as a condition of membership in the supplemental lender, or as a condition of receiving financial assistance from such lender;

(iii) Patronage capital allocated from a power supply cooperative of which the borrower is a member.

§ 1715.25 Records.

(a) Every borrower shall maintain accurate records concerning all investments, loans and guarantees made by it. Such records shall be kept in a manner that will enable REA to readily determine:

(1) The nature and source of all income, expenses and losses generated from the borrower's loans, guarantees and investments;

(2) The location, identity and lien priority of any loan collateral resulting from activities permitted by this subpart; and

(3) The effects, if any, which such activities may have on the feasibility of loans made, guaranteed or lien accommodated by REA.

(b) The records of borrowers and their subsidiaries shall be subject to the auditing procedures prescribed in Part 1773 of this chapter. REA reserves the right to review the financial records of any subsidiaries of the borrower to ascertain if the debts, Guarantees (as defined herein), or other obligations of the subsidiaries, could adversely affect the ability of the borrower to repay its debts to the Government or to determine if the borrower is in compliance with this subpart.

(c) Every borrower shall report to REA, in the manner and on the form specified by the Administrator, the current status and principal amount of each outstanding loan and guarantee which it has made pursuant to § 1715.23 of this subpart.

(OMB Nos. 0572-0032 and 0572-0017)

(d) In determining the level of investments as a percent of total utility plant (as defined in this subpart) for reporting to REA during any calendar year, the borrower shall use the recorded value of each qualifying investment as reflected on its books and records for the next preceding end-of-month, except for the end-of-year report which shall be based on December 31 information.

§ 1715.26 Effect of this subpart on REA loan contract and mortgage.

(a) Nothing in this subpart shall affect any rights which supplemental lenders have under the REA mortgage to limit investments, loans and guarantees by their borrowers to levels below 15 percent of total utility plant.

(b) Nothing in this subpart shall relieve a borrower of its obligation under the REA mortgage to preserve the lien of the REA mortgage as a first lien on all of the borrower's assets, subject to such limited exceptions as may be provided for therein.

(c) Nothing in this subpart authorizes a borrower to make extensions or improvements to its electric system without prior approval of REA.

(d) REA reserves the right to change the provisions of the REA mortgage, on a case-by-case basis, in connection with providing additional financial assistance to a borrower after July 31, 1989.

§ 1715.27 Restrictions imposed by other lenders.

Nothing in this subpart is intended to prevent a supplemental lender from imposing, enforcing, or modifying restrictions contained in its loan documentation that limit the rights of a borrower to make loans, guarantees or investments.

§ 1715.28 Investments, Loans, and Guarantees in excess of 15 percent of Total Utility Plant.

If a borrower wishes to exceed the aggregate amount of investments, loans, and guarantees permitted under § 1715.23 of this subpart, the borrower must comply with the provisions contained in the REA mortgage to the effect that it must obtain prior approval from REA. Requests of the type described immediately above should be made in writing for consideration by REA on a case-by-case basis.

Dated: June 22, 1989.

Jack Van Mark,

Acting Administrator.

Appendix I—Final Rule 7 CFR Part 1715, Subpart B, §§ 1715.20–1715.28, Investments, Loans and Guarantees by Electric Borrowers.

Note: This Appendix is published for information only and will not be codified in the Code of Federal Regulations.

The following information is presented to illustrate the relationship between the REA-Borrower Mortgage, and the type and level of investments, loans or loan guarantees that borrowers may make and be in compliance with § 1715.23 of this subpart.

Sample Applicable Mortgage Provision—Note that REA-Borrower Mortgages are not uniform. However, the following sample Mortgage provision is representative and is used to illustrate how § 1715.23 would apply in the cases of a borrower that had the most common type of mortgage currently used in the REA program. The following example below is presented here for illustrative purposes only, and does not mean that future mortgages will contain the provisions used in this example.

Sample Article II, Section 22 of the REA Mortgage for Wyngate Electric Cooperative (hypothetical name) reads as follows:

Section 22. The Mortgagor will not, without the written approval of both of the Mortgagees, hereafter make any loan or advance to, or make any investment in, or purchase or make any commitment to purchase any stock, bonds, notes or other securities of, or guaranty, assume or otherwise become obligated or liable with respect to the obligations of, any person, firm or cooperative, except (i) securities or deposits issued, guaranteed or fully insured as to payment by the United States Government or any agency thereof, (ii) Capital Term Certificates or other securities of CFC, (iii) capital credits resulting from the payment for power and energy purchased and actually received from a generating and transmission cooperative of which the Mortgagor is a member, (iv) loans, deposits, advances, investments, securities and obligations which the Mortgagor has, prior to the date hereof, committed itself to make, purchase or undertake, as the case may be, and as to which the Mortgagor has given the Mortgagees notice in writing prior to the date hereof, and (v) such other loans, deposits, advances, investments and obligations as may from time to time be made, purchased or undertaken by the Mortgagor; *provided, however,* That the aggregate cost of investments, plus the total unpaid principal amount of loans, deposits, advances and obligations, permitted under this clause (v) shall not at any time exceed 3 percent of the total utility plant (as such term is defined in the Uniform System of Accounts) of the Mortgagor.

Selected Borrower Financial Data as of 12/31/88:

Total Utility Plant in Service........ $20,000,000

a Cash Deposits in two FDIC Insured Banks with $100,000 insurance

limits	600,000
b. Capital Term and Subscription Term Certificates of the National Rural Utilities Finance Corporation (CFC)	200,000
c. CFC Commercial Paper	4,000,000
d. Capital Credits accrued with its power supply cooperative	250,000
e. Unsecured Loan which preceded the date of this Mortgage and REA had been notified in writing prior to the execution of this Mortgage	200,000
f. Investment in Land purchased for an Industrial Park	15,000
g. Loan guarantee issued to support Bonds issued by local rural water and sewer system	1,000,000

Allowable total investments, loans and guarantees that the borrower may make without the written approval of the Administrator pursuant to § 1715.23

15 percent × Total Utility Plant Level of $20,000,000 = $3,000,000

Shown below are the investments, loans and guarantees which are not excluded per terms of the Mortgage and, therefore, are used to determine compliance with § 1715.23.

Mortgage Related Provision

Uninsured Portion of FDIC Bank Accounts (i)	$400,000
Investment in land purchased for Industrial Park (v)	15,000
Loan Guarantee to support Water and Sewer Bonds (v)	1,000,000
Total Nonexempted Investments, Loans and Guarantees	$1,415,000

All other above described investments, loans and guarantees are exempted by virtue of specific Mortgage Section 22 provisions and are not considered in determining compliance with § 1715.23. Wyngate Electric Cooperative's total nonexempted investments, loans and guarantees of $1,415,000 are lower than the $3,000,000 compliance level and, therefore, the amount is in compliance with § 1715.23.

The Co-op has $250,000 on deposit in a local bank to meet its working capital needs. $100,000 of this amount is covered by FDIC insurance (i). The balance ($150,000) is uninsured. It has invested $100,000 in Capital Term Certificates of The National Rural Utilities Finance Cooperative (CFC) in order to become a member of CFC (ii). It has also purchased "Subscription Term Certificates" (STC's) issued by CFC and bearing interest at 3 percent (ii). The STC's were purchased from CFC in the amount of 5 percent of a $25,000,000 long term loan (i.e. $125,000) pursuant to CFC lending requirements. The Co-op has also invested $10,000,000 in surplus general funds in CFC's commercial paper program and CFC has issued its note to the Co-op to evidence the investment (ii). The Co-op is a member of a generation and transmission cooperative (G&T) from which it purchases electricity for distribution to its members. The G&T routinely allocates a portion of its net margins to the Co-op as one of its members. The G&T has allocated capital credits of $250,000 to the Co-op but has not yet distributed them (iii). In 1971 the Co-op borrowed $250,000 on an unsecured basis from a local lender which is due in full in 1991 and so notified REA in writing prior to the execution of its REA mortgage in May of 1973 (iv). The Co-op has invested $15,000 to purchase land for an industrial park (v). Except for the amount of the Co-op's bank deposit which exceeds FDIC insurance coverage and the investment in the industrial park, all of the foregoing are excluded for purposes of determining compliance with § 1715.23. Thus, if the Co-op had total utility plant amounting to $35,000,000, the aggregate amount of otherwise investments, loans or guarantees it may undertake under this rule would be computed as follows:

[$35,000,000 × 15 percent]—[$150,000 + $15,000)] + $100,000 + $125,000 + $10,000,000 + $250,000 + $250,000 = $15,985,000.

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Mr. English. Well, the problem we get into, though, as I said, is the REA is the entity that has a tremendous influence on those folks. They are the ones that are going to be overseeing. They are the ones that are going to be checking to make sure that they are carrying out the law in the manner in which it is supposed to be.

If I were running a coop someplace, I can assure you I would not take advantage of that kind of an opportunity—I do not care how much I supported rural development—if I, in some way, got the impression that the REA was not enthusiastically supporting that effort, and I think that from the people that I have talked to in coops in my State and around the country—we heard from some 240 witnesses with regard to rural development over in the Conservation, Credit, and Rural Development Subcommittee, people around the country.

A lot of people that have testified have been from REC's, and I have yet to have a single one that has indicated to me that they thought there was any kind of interest or enthusiasm in the REA for exercising this particular provision, and in fact, we had a sizable percentage that told us that they were waiting on the guidelines from the REA before they began exercising.

They, quite frankly, were not sure what they were able to do or were not able to do, and from the impression I got from what you just said, not only have you not issued any, you really do not have much inclination to do so. Is that correct?

Mr. Van Mark. That is exactly correct. If we issued guidelines, then that would be interpreted, if I follow your logic, Congressman, as direction, and we want them to feel free to engage in rural development as they see fit in that unique environment in which they exist.

There can be no question about our enthusiasm, though, because we have said it numerous times. The Undersecretary has said it. A little sidelight, Congressman.

We made the presentation a couple of times in which we talked about the little—and I say "little" and mean just that—the zero-interest loan grant program. When some of our borrowers found out that they were responsible for the repayment of that $100,000 that they were going to leverage into various projects—I will say an incubator project—they decided they were not too interested if they were responsible for repaying that $100,000, even at zero interest.

Now, you draw your conclusions.

Mr. English. Well, I assume that the only conclusion we can draw is that, as a group, the rural electric cooperatives around this country are not interested in rural development. Isn't that the only conclusion that we could draw, then, if we are to follow the line of reasoning that you just laid out?

Mr. Van Mark. If there was some risk of their own money, yes.

Mr. English. Well, the loans that you were talking about making at zero interest, what risk to their money would there be with regard to——

Mr. Van Mark. Repayment of the principle in 10 years, which you could lose that $100,000 in rounding in operations of most of our coops.

Mr. **English**. So, if I were running a coop, then if I followed your line of thinking, basically I am not interested in doing anything that deals with rural development beyond a grant. If somebody gives me the money, then maybe I am interested in doing something. If it is anything short of that, that is the attitude of most of the people on the boards that are running the coops around this country, and let's see, if I am, in fact, running that coop—and according to the statistics that we have had over the past 10 years, I am losing between 400,000 and 500,000 people a year out of rural America, primarily affecting my coops, that means, then, that I have virtually no interest in my own survival.

That does not seem to make a whole lot of sense to me, Mr. Van Mark. In order to follow your line of thinking, I would have to be, in effect, willing to destroy my own entity.

That does not jive with the testimony, certainly, that our subcommittee has received across this country. It certainly does not jive with the interest that has been shown by the national organization, as demonstrated in the Senate bill. That does not jive with the board members that I have talked to that belong to these cooperatives. That does not seem to make any sense at all.

Mr. **Van Mark**. I have only presented the facts as they are, sir.

Mr. **English**. Well, do you think there, perhaps, is the chance that you do not understand the facts? Maybe you are misreading the signals that you are looking at. Is that possible?

Mr. **Van Mark**. I am not infallible, sir.

Mr. **English**. If, in fact, you are making that error and we do have coops—perhaps even a majority of the coops around this Nation—that are very interested in their own survival, that are very interested in building their communities, that are very interested in playing a role in the development of those communities and understanding that if, in fact, they are going to be able to continue to exist, they have got to have growth, and in fact, they feel that the REA, the organization that you are operating and the signals that you are sending is that they should not do that, then we have got a real problem, don't we?

Mr. **Van Mark**. They cannot come to that conclusion, sir. We have told them that they have that option and that they are encouraged to use it.

Mr. **English**. How are they encouraged to use it?

Mr. **Van Mark**. We mention it to them every time we talk.

Mr. **English**. I am not sure I understand. You have not sent out any directives, any advisory opinions, anything at all that would indicate to them as to here is how you should proceed if you are interested in taking advantage of this, here is what the situation is as far as utilizing these funds, here is the impact that it would have as far as the REA is concerned, here are the things you should look out for, here is where you might get into trouble, here is how you can be assured that you are going to be able to deal with this problem or deal with the use of this option.

You have not done any of that, have you?

Mr. **Van Mark**. We sure as the world have not issued any directives.

Mr. **English**. So the only directive that has been is whenever you had to speak someplace, you go out and you say, you know, if you folks want to take advantage of it, you can do that.

Mr. **Van Mark**. We held a conference in conjunction with NRECA, the electric borrowers trade association, at the Department of Agriculture in August. Invitations were sent out by NRECA. There were 300 people in attendance from all over the country, and we talked about these options and the possibilities that were available at that time.

Mr. **English**. We just got through hearing that this spring, the President of the United States, your boss, has indicated that he is interested in rural development. He wants to do something about rural development.

Do you think that interest is from the standpoint of, well, it would be nice if something is done on rural development, it would be nice if these rural communities survive, it would be nice if somehow they were able to grow, or is this a situation in which, in your opinion, the President of the United States says we have got to restore rural America? By golly, I want our administration playing a positive role. We want to make sure that things get done. We want to make sure that we have growth. We cannot allow rural America to be wiped out in this country.

Now, which one of those do you think more closely fits the attitude of the President of the United States, as you understand it?

Mr. **Van Mark**. I would say he wants us to do something and make ourselves available to assist rural America or any rural development effort that is sustainable at the local level.

Mr. **English**. So, you think that the President of the United States expects that you and the REA, as well as the rest of the Department of Agriculture and the rest of the Federal Government, take positive steps to reinvigorate rural America. In other words, he is not assuming a passive posture with regard to this issue. Is that the way you see it?

Mr. **Van Mark**. I think that is correct, but I do not think he also said that we direct them to build a certain incubator project or anything of that sort.

Mr. **English**. I have not suggested that, have I, Mr. Van Mark?

Mr. **Van Mark**. You asked us if we had sent out directives, and we have not.

Mr. **English**. Well, that is a far different matter whenever you send out directives as to how you do things, how the programs works, what problems you might run into, how in fact you should proceed to keep yourself out of trouble. That is a big difference, isn't it? That is not telling people directive on you build a certain incubator project, is it?

Mr. **Kislak**. Mr. Chairman, if I may, I think it is clear that somewhere between what we believe the message we are transmitting to the coops and what they are hearing, that there is a lack of communication there. Certainly, a major part of that has to fall on the agency. It takes two.

It cannot happen in one way, and if we are not doing an appropriate job of communicating the dedication that this President and this Secretary and the team has to rural development and to the important role that coops can play, if they choose to, and certainly, I do not think anybody here would like to leave the suggestion that we believe that the majority or all or any rural electric coops are not interested in developing their community and not interested in survival of their community, economic viability of their community, because I do not think we believe that, and if there is a shortcoming on our part that you have highlighted, we have to find ways to fix it.

We would welcome any observations you have into how we can communicate to the REC's, as well as to the communities at large, but specifically to that audience of REC's. Our dedication to rural development and our enthusiasm, if they want to take a role, is to support their taking that role.

Mr. ENGLISH. Well, I am delighted to hear that. I appreciate that sentiment and that attitude, and I think that it is important, because we do have a problem in this area, in my opinion. You know, we have talked about it with regard to legislation.

We have got all kinds of programs that have been authorized. Mr. Johnson has got programs over there in the Farmers Home Administration.

Mr. Johnson, do you have a program over there in which you turn back money every year? Every one of your programs, you run short of money, don't you? You have got more applications than you can fill and you deal with. You have got programs over there that are not funded by the Congress. There is simply not enough money to go around.

So, we have got authorization just running out our ears to do things. You know, the question is, I think—and this is going to be the key as far as rural development—how can we take those resources and have the maximum impact, and we have, through the 1987 act, certainly the opportunity for REC's to get involved.

I think that we might even go just a hair further and say that giving the REC's and their relationship with the U.S. Government and the fact that they borrowed money and the fact that they were created by the U.S. Government, maybe we can expect just a little bit more out of the REC's and their involvement in rural development because of the fact of their relationship with the government.

I think we can expect that the REA, as a part of the U.S. Government, and given what Mr. Van Mark understands and what I would hope would be the attitude of the President of the United States, and certainly is the attitude of the U.S. Congress that we aggressively be involved in rural development, that is the key, Mr. Kislak. I think it is aggressive.

I think there is also another point, and I know it is not very diplomatic of me to bring this up, but I think, you know, in this kind of a situation, it is best to lay the cards on the table.

The last administration was not that interested in the continuation of the REA, and certainly, this subcommittee held hearings in which it was amply demonstrated that the intent of Congress was not being carried out, and it became necessary for us, with regard to communications and the use of the Rural Telephone Bank, for the Congress to come and to underscore and require through legislation, and we are finding again that this subcommittee, and certainly, the Subcommittee on Conservation, Credit, and Rural Development, over the next few months, is going to take similar action, that we have to be very vigilant in making sure that the intent of not only the previous law but of the law that was passed last year is carried out.

So, I guess what I think is important for us to clarify and to understand is that it is my understanding—and I think that we have got a right to look very closely and make sure that this is the case, Mr. Kislak—it is my understanding that the attitude of President George Bush is that Federal agencies—Department of Agriculture and throughout the Federal Government—be actively involved in assisting rural America and promoting the development of rural areas in this country.

That is the way I understand it. Is that the way you understand it, Mr. Kislak?

Mr. **Kislak**. Yes, sir.

Mr. **English**. OK. That being the case, you know, we cannot have any foot dragging, we cannot have any people that are a little bit wishy-washy as to whether we want to do it. I think that, aggressively, we have got to go out and help people.

We have got to show them how to do it, and that is certainly true of the REC's, Mr. Van Mark. I think you have got to show them, you have got to encourage it. It is still their decision on what they do with their money. It is their decision on whether they approve a project or not, but here is what the procedures are. Here is how you do it. Here is the role that you have to play. You are a community. Your State and your Nation is counting on you to play a role, to step forward.

We have got to make sure, as far as our rural telephone systems are concerned and the cooperatives, that they have the opportunity to deal with this problem, and we cannot have any, well, we are going to have some hip-pocket rules that are going to kind of spread things around, make it as difficult as we can to operate. We cannot allow that.

They have got to play a critical role as far as rural development. You know, if we do not have communications, we do not have modern communications in these communities, there is no way they can develop.

So, I think that is the key, and Mr. Chairman, I appreciate the amount of time that you have given me to kind of underscore that, and I will probably have some other questions later, but I think that that is something that we are going to have to focus a good deal on.

Mr. **Wise**. Mr. Kislak, or anyone else, the Senate bill that has passed would require the REA Administrator to establish a technical assistance unit to provide advice to REA borrowers regarding community and economic development activities.

As Chairman English noted, another provision is dealing with Farmers Home. This provision authorizes no additional funding for these new activities.

My question is, first, does the REA have the money to support these additional responsibilities?

Mr. **Kislak**. Mr. Van Mark, maybe you can talk about the fiscal year budget we just completed.

Mr. **Van Mark**. In 1989 we possibly could have done that, Congressman, but in 1990 we are so tight that I have instructed that everyone's travel budget is to be cut 15 percent. I have said we cannot employ the numbers up to actually what the appropriations report, committee report indicated we ought to have, 550 employees. We cannot do that. We don't have enough money.

Mr. Wise. Do you——

Mr. Kislak. Mr. Chairman, let me respond further. The final numbers are not complete, but the last version of estimates that we saw for the personnel and expenditures, nonprogram expenditures at REA was that in 1989 we would be within $300,000 of the ceiling on a $30 million budget. Even in 1989, while Mr. Van Mark suggests it might have been done, $300,000 is a pretty slim margin to end up with and I am not as convinced as he that even in 1989 with no sequestration and no pay raises and none of the other things that we see happening for 1990 that we would have been able to support adequately that kind of an effort.

Mr. Wise. So you say you are pretty optimistic on sequestration. I just came out of a meeting about how we adjust our congressional budget, if that's a portent of things to come.

Do you think that REA is the most appropriate vehicle for administrating the kind of help to be provided by a technical assistance unit? As I said, it's regarding community and economic development activities.

Mr. Kislak. I believe, Mr. Chairman, that is probably not. Farmers Home certainly has a broader array of programs that they administer directly in-house. The USDA, the Under Secretary's office where that position resides right now includes both REA and USDA and brings more clout than any individual agency to being able to coordinate between agencies and outside of the USDA.

Mr. Wise. Let me follow up on that then, because this Senate legislation also adds a new rural economic development title to the REA or to the Rural Electrification Act, giving the REA Administrator several new duties and I am just going to touch on a few of them: One, to administer various pilot projects and recommend specific rural development projects; two, to act as an information clearinghouse providing information to REA borrowers concerning rural development efforts; and three, to administer the rural business incubator fund, which in itself entails a fairly complex set of responsibilities.

Do you think it makes sense to give these kinds of duties to REA or would they be better placed in Farmers Home or some other agency?

Mr. Kislak. Mr. Chairman, as we discussed in our testimony, REA has expertise in the areas that it has expertise in—that is telecommunications and electrification. It does not have expertise in some of these other areas. Most of those functions are done elsewhere at this point in time.

The information clearinghouse may be similar to the rural information center that the national ag library runs. I am not sure exactly what the intent was. Business incubators, certainly there are other places where there would be. The Small Business Administration or the Economic Development Administration or perhaps the Farmers Home business and industry and community facilities may be more appropriate to handle it because they have that kind of a background and that kind of support.

Mr. **Wise**. Mr. Johnson can get involved in business incubators, can't he?

Mr. **Johnson**. Pardon me just one moment.

Mr. **Wise**. Take your time.

Mr. **Johnson**. Under the intermediary relending program that's been authorized in recent years, we do get into some of that, but we are also involved with our business and industrial loan program in some aspects. I am not sure we are exploring the business incubators in this context.

Mr. **Wise**. Let me check with Mr. Thomas what your schedule is. I am going to come back and then I've got other questions.

If you are not able to, then I'll be happy to cede some to you if you wanted to——

Mr. **Thomas**. Mr. Chairman, I would just make one comment and that is my experience and Mr. Van Mark also, there is enthusiasm and there is a great deal being done within the cooperatives for economic development. The thing that they are reluctant to do sometimes is to loan money but there are things like rates made—there are many things that are being done and there's a great deal of interest in the rural electric cooperatives on the local level so that certainly I just wanted to put in the record. Thank you.

Mr. **Wise**. Well, what we will do then, this is a vote coming up that no member wants to be found wanting, concurrence in the report on the Flag Protection Act.

I would ask the committee and the panelists to be in recess for 10 minutes. Thank you.

[Recess taken.]

Mr. **Wise**. The subcommittee will resume.

Last as I recall we were talking about business incubators and an expanded role for REA including possibly administering various pilot projects, acting as an information clearinghouse and administering the rural business incubator fund.

Would it be safe, is my paraphrasing correct in that the impression I was getting from your testimony was these functions are already being taken care of in other areas?

Mr. Johnson.

Mr. **Johnson**. There are some different definitions of incubator, and that's the reason I was hesitating a moment ago. There are a lot of different variations of them.

The main thing that we try to avoid is getting into experimental types of businesses or anything. We like to deal with proven technology. We don't like to get into just research as such, but certainly there is a ton of opportunities out there that fall within the parameters of what we utilize these loans for.

There are some types of my definition of business incubator that we are engaged with.

Mr. **Wise**. When you say you do not like to be engaged in—you like to be engaged in proven businesses, which I understand given your charter, but for instance would you consider a technology based business such a data processing business, where does that fall in your——

Mr. **Johnson**. Certainly, there may be some degree of experimentation in it, but we would want most of that technology to be a proven technology.

Maybe I can give you a little better example as it related to our involvement in alcohol fuel plants some years ago.

That was obviously a proven technology. People knew how to extract and get alcohol. That is a proven technology. We did find that it was a lot more experimental after we got into it. When you started trying to deal with a large operation to produce a lot of alcohol as opposed to a small amount that somebody might consume——

Mr. Wise. Apparently if you follow the proceedings of the Energy and Commerce Committee, it's still experimental in some people's minds.

Mr. Johnson. Any business has some degree of experimentation and we recognize that, but we want the bulk of the business to be along the lines of some proven kind of technology or utilization.

Mr. Kislak. Mr. Chairman, let me answer the thrust of your question. Yes, I think it is accurate to characterize our feeling that those three responsibilities are properly carried out elsewhere in the government, whether it be in Farmers Home or somewhere else today, that adding those responsibilities to REA does not add anything to the array of services, in fact duplicates the array of services that we offer local communities.

Mr. Wise. Would I be correct also, Mr. Kislak or Mr. Van Mark that adding this to REA only—would also require adding staff to REA, would it not?

Mr. Kislak. Adding staff isn't an issue right now, given the budgetary constraints. Given the budgetary constraints today it would mean taking staff off of other important projects that are to REA's major thrust, to either electrification or telephone, where there is not another agency to my knowledge that could substitute and pick up the slack.

Mr. Wise. Some proposed legislation provides for telecommunications assistance to schools, hospitals and businesses in rural America. The school and hospital provisions under the Leahy or under the Senate legislation are placed under REA whereas the business link provision is placed under the jurisdiction of the Secretary of Agriculture.

First of all, and I think I know the answer already, but does REA have the staff in place to handle the school and hospital provisions and this essentially is making grants to what would be known as star schools for educational linkups and to hospitals, rural hospitals and medical centers, to be linked up to larger medical centers?

Mr. Van Mark. Well, Congressman, we have our telephone staff that handles loan applications from our borrowers. But no, we don't have a staff dedicated to knowing the specific telecommunications needs of rural health care facilities.

Mr. Wise. This isn't your bailiwick, really, is it?

Mr. Van Mark. Not hospitals.

Mr. Kislak. Congressman, the technology of providing the link, whether it be a fiber optic or dedicated cable or something of that sort, the REA—correct me if I'm wrong, Jack—the REA would finance under its existing programs and has the expertise to oversee and assist a cooperative to install those communications facilities.

The technical aspect of what a hospital needs, whether it needs a satellite hookup or a radio hookup or whatever, is something that—I'm not sure, could we provide that or not at this point, Jack?

[Discussion off the record.]

Mr. **Kislak**. Right up to it—we could right up to the hospital.

Mr. **Wise**. The interesting thing on the Senate legislation though is it provides the grants directly to the hospitals or to the schools so my question then becomes whether that is something you are able to presently assist with.

Under the legislation if you are providing this to the hospital directly, Charleston area medical center, for instance in West Virginia, are you able to provide the technical assistance presently to that hospital, not to getting it to the hospital?

I think I got a pretty emphatic no.

Mr. **Kislak**. It appears that the answer is no, not at this time. We don't have any ability to help.

Mr. **Wise**. Many rural areas do not have E-911 service because their homes and their communities don't have street addresses, my own included.

Street addresses and street signs are central to direct fire trucks, ambulances and police cars or in the absence of that I don't think you are going to get a street sign out on my dirt road.

Some kind of computer mapping for emergency responders, my question is whether there are not programs available in either Farmers Home, USDA, or anywhere that could help these areas pay the engineering costs of mapping rural communities.

Mr. **Johnson**. I wouldn't think so.

Mr. **Kislak**. To the best of my knowledge, Mr. Chairman, there are no programs to that direction ongoing right now in USDA.

Mr. **Wise**. Do you know whether there is even consideration of it, because those of us do feel a little naked in rural areas.

Mr. **Kislak**. What Mr. Van Mark points out is if a coop wanted to submit for the zero interest grant program to support that kind of an engineering effort, that would be an eligible project.

To the best of my knowledge—I'm not familiar with any place in the USDA where the topic is being addressed.

Mr. **Wise**. Moving on to another area, and perhaps you touched on it in your opening remarks, last year the USDA appointed a rural revitalization task force which called for better coordination of rural programs.

My question is to the extent that these recommendations are being implemented.

Mr. **Kislak**. Mr. Chairman, we have a copy of it here. It was led by as you know one of your constituents, John Musgrave, and while there has not yet been a formal announcement on many of the recommendations, primarily awaiting the President's prerogative and the EPC report and the President's initiative on world development, I think it's safe to assume that most of the recommendations will be accepted either exactly as presented or with some embellishments and maybe even some strengthening.

Mr. **Wise**. Is this the report that you mentioned earlier, Mr. Kislak, is at the White House now?

Mr. **Kislak**. No. There are two reports. The President ordered a Cabinet level study that was chaired by Secretary Yeutter. The results of that study with the recommendations are at the White

House right now. That is the EPC economic planning council. That will have some recommendations regarding coordination and various other kinds of things beyond the USDA.

The Musgrave study, which is this one which is public and we'll be glad to leave copies, was conducted inside of USDA, led by John Musgrave, who for those who don't know is the State director of Farmers Home from West Virginia.

It came up with a number of recommendations of organization and other things surrounding rural development. How can we better—first of all, how can we identify and nurture and train and help those local leaders in their community who want to take a role? How can we better organize the USDA so that when somebody in West Virginia or in Oklahoma sticks his head up and says I'm ready to take the lead in my community, to bring to new jobs, that we are organized to make it easier, not more difficult for him to access the USDA programs—and some other areas regarding research and similar kinds of things.

I believe that over the coming weeks you'll see the Secretary implement virtually all of the recommendations that were made.

Mr. WISE. My impression of that report is that it is a very candid assessment and I thought a welcome one.

My hope is that much of it will be implemented, not only because we've got some hometown pride in John, but because it is an excellent report.

Mr. Johnson and Mr. Van Mark, you are each Acting Administrators for your Administrations. Do you have any idea when Farmers Home and REA are going to be getting permanent Administrators?

Mr. KISLAK. Mr. Chairman, I think it is presumptuous for any of us to preempt the President's prerogative to make his announcements.

Mr. WISE. I understand that but you also understand that—particularly if you are drafting rural development legislation and you are trying to establish working relationships—you need to know where the policy is being formulated, whether the policy is being formulated, and what the policy is.

My observation of those that are put in an Acting Administrator's role is they have got a tough job. They have got to run an agency and at the same time try and anticipate what the policy is going to be, but yet they are not actually the ones—they may not be the ones implementing it.

A very serious question then is—particularly in rural development, particularly to the oversight of this subcommittee—is when do we get permanent Administrators?

Mr. KISLAK. Your point is well taken, Mr. Chairman. The difficulty of running a large agency or even a smaller staff without the feeling of permanence. I might add though that rural development policy is not being set by either of the two Administrators. In this Administration it's being set by the Under Secretary or the Secretary directly.

Mr. WISE. And you see it continuing to be that way?

Mr. KISLAK. Yes, sir.

Mr. Wise. Another question: Do you envision ways in which Farmers Home business and industrial loans could be used in conjunction with REA programs for economic development?

I guess I am stressing particularly here the rural telecommunications aspect of it.

Mr. Johnson. Certainly we try to work very cooperatively and closely. We are involved in weekly staff meetings and some more frequent. We are always trying to look for ways to work to improve upon our relationship.

Let me give you an example, if I might, that might correct an earlier statement that I made.

When you asked earlier about mapping in conjunction with where an area's houses may be, if that was a part of a community facility loan—for example, we could make a loan to a fire station and rescue unit. If they wanted to have a big map of their county or area they were going to serve and have some lights on there to point it out, if that was included in the feasibility study, we could finance such a thing.

Mr. Wise. Let me take it a step further, because most of the 911 services I have seen or at least the mapping part of it is on a computer screen. I call in 9-1-1 and the operator is able to automatically call up—knows the call is registered, where it is coming from and the computer screen shows the directions. In a city it would give the address but the computer screen shows the directions to that locality, to that site.

Mr. Johnson. Again, if it is included in the feasibility study that they want this facility, this computer, and so forth, we could probably finance that.

Mr. Wise. Somehow if I can get it into the volunteer fire department I may get a loan on it. If I've got it down to the local telephone company, I might have some other problems. Then you say that REA might be able to pick that up.

Mr. Johnson. As an example, within the buildings we take care of most of those things if they are included in the feasibility plan. We go outside to connect to power poles or telephone lines but within the building itself we can take care of most of those things.

Mr. Wise. Could you cover the engineering costs?

Mr. Johnson. Certainly, if that is a part of the total project and included in the feasibility study.

Mr. Wise. Appreciate it. Mr. English.

Mr. English. Thank you, Mr. Chairman.

Mr. Johnson, since the Secretary took over, Secretary Yeutter took over, have you had any personal meetings with him or Mr. Vautour in which they specifically laid out what this Administration's policy is to be with regard to the question of rural development?

Mr. Johnson. I have been involved in a number of staff meetings that included it, both with the Secretary and with the Under Secretary, on a regular basis.

Mr. English. Were you given specific instructions as to how you were to approach the questions of rural development?

Mr. Johnson. The major policy direction, yes, I would say that direction is coming. It comes through a number of sources, but certainly, from direct meetings. That is the way we get the overall feel of the major policy thrust that is to be involved. Obviously, we make many, many decisions, and I have to, as an Acting Administrator, everyday, I make a lot of decisions. Anything that I think is of any significance at all in which I am not clear in my mind on what the policy direction is, I involve the Under Secretary, at least.

Mr. ENGLISH. What do you understand to be the clear policy direction of the Secretary?

Mr. JOHNSON. As it relates to rural development?

Mr. ENGLISH. Correct.

Mr. JOHNSON. Well, I see it as very proactive, that we want to really look at every opportunity to enhance and assist with all of our loan and grant programs to the maximum extent in rural development. As you may know, I have been involved with the agency for a number of years. In fact, in the implementation of the Rural Development Act of 1972, I was a project manager then in which we looked to see what kinds of things might fit into Farmers Home, as opposed to some other agency.

Mr. ENGLISH. How does the policy of this Secretary differ from the policy of the last Secretary?

Mr. JOHNSON. Certainly, with the current Secretary, I have felt that there has been very much an interest in rural development. We have certainly utilized what funds have been available for all these years.

We have been obsessed, almost, in Farmers Home, in recent years, with the agricultural problems that we were faced with and that aspect of our portfolio. I think that has been an obsession that I have observed, both in Congress and with Farmers Home, as well, but that is not to say that we have not utilized or pushed our rural-development initiatives.

Certainly, we are hearing more under this Administration, with Secretary Yeutter, President Bush, and the Under Secretary, than we have in other years, again, because of that almost obsession with trying to work our way through this difficult agricultural situation.

Mr. ENGLISH. How do your instructions from this Secretary differ from the instructions of the last Secretary, specific instructions with regard to rural development?

Mr. JOHNSON. It is just a greater emphasis, greater emphasis. He wants much more of a coordinated role, is what I sense as our direction.

Mr. ENGLISH. You are not telling me specific instructions.

Mr. KISLAK. Mr. Chairman, I am not sure, and perhaps we are not on the schedule that you would like us to be, that the Secretary's policy and policy directives are completed yet. The report from John Musgrave was presented in the beginning of July.

Since that time, the Secretary has held two or three meetings with all agency heads, all subcabinet level and agency-head people of USDA gathered around the table and pointedly told them that it is the job of each one of them to figure out how they can use the tools at their disposal in the agencies that they had to further non-agricultural job growth in rural America.

He has spent two or three meetings of an hour to 2 hours each with all agency heads, not only emphasizing his commitment, but going around the table and asking for the specifics from each agency or specific thoughts on how their individual agency, whether it be Forest Service or whatever, could support this secretarial goal of rural development.

Those are the kinds of things that are going into the policy that is being formulated. Those are contributing factors to the policy that is being formulated at the White House right now, other than what Sox alludes to is a feeling or a directive that there is an emphasis on rural development and that rural development, in this case, will be defined as nonagricultural jobs.

There has not been a specific directive or policy to individual agencies or assistant secretaries as to how we are going to carry it out. That is forthcoming.

Mr. ENGLISH. Given that, Mr. Johnson, your new sense of interest by this President and by this Secretary and the fact that you understand that you are to focus a good deal more on the rural development, what action have you taken with regard to the State directors and their approach to this particular problem? Have you taken any specific action with regard to State directors as far as rural development is concerned?

Mr. JOHNSON. Yes, we have. We have been in the process of reappointing or designating new State directors. I have participated, of course, in the interview process on that and have spent considerable time with each one.

Mr. ENGLISH. OK. Now that you have spent considerable time going through that interviewing process with them, was there any particular attention paid to the credentials, background, what contribution that they might make as far as rural development is concerned in making the appointments? Were they required to have any specific qualifications with regard to rural development before their name was recommended?

Mr. JOHNSON. Yes, sir. I do not know of any that we have appointed that do not have both an understanding and a great appreciation and a great commitment to rural development.

Mr. ENGLISH. Well, a commitment is one thing. Whether they can make a contribution and have the background is something else. What specific background are they required to have as far as rural development is concerned before they are being seriously considered?

Mr. JOHNSON. Well, we function much like a bank, as you know, except one with a little special edge on it as it relates to our authorities and our funding and appropriations. So, obviously, we expect them to understand those programs. Many of them may not have had a comprehensive background in all aspects that we have authorities to operate in.

So, we want somebody who has a good level head and can be a good business manager and communicate with the people and has, certainly, the degree of intelligence needed to get a good working knowledge of those programs and can provide leadership not only to our employees but in working with other lenders in the area, as well as potential borrowers.

Mr. ENGLISH. So, they are not specifically required to have any background as far as rural development is concerned before they are recommended. Is that correct?

Mr. JOHNSON. I guess I would have to say it is correct. I never have recommended someone for a position that I did not think had a good feel and a good knowledge of it.

Mr. ENGLISH. In the hearings that were held in the Conservation, Credit, and Rural Development Subcommittee, one of the problems that we ran into is that there seemed to be great latitude as far as the State directors were concerned. We would find one set of criteria was being required with regard to loans in one State and was not being required in another State. We found varying degrees of interest, evidently, being evidenced by State directors in these particular programs. Some were good. Some were very good. Some were not good.

We found that the State directors were, in fact, coming up with their own set of criteria with regard to whether a loan would be approved or not, that really raised question with regard to—as you looked at the criteria, it is hard to come away with any conclusion, other than the fact that these were the roadblocks. They were meant to present obstacles, to make it difficult, if not impossible, and as I said, granted, this testimony reflected over the last administration.

Have you taken any steps at all to evaluate what criteria is being required by the individual States and require justification for that criteria by the State directors?

Mr. JOHNSON. Yes, sir. This is a continual process that is reviewed at least monthly by our senior management.

We establish program management servicing goals. I am working on that process right now. They will be going out. They are very definitive. They establish very definitive goals. There are elements and standards, performance ratings of our State directors. They have those. We are monitoring those things, and we are giving them feedback on a monthly basis in essentially all of our program areas as to where they are lacking in utilization or certain servicing actions.

You know, when I look at these State directors I do not see a stereotype of a State director in Farmers Home that would be the ideal person. It varies State by State. Our regulatory system has to be able to adapt in Maine as it does in Oklahoma or West Virginia or wherever.

So, our general regulations—and we are sticklers for compliance with regulations—we want our people to comply. Then they have to modify goals, by a State appendix or an addition. Those have to be cleared back with us to see if they comply and are consistent with our overall guidance and regulations.

So, we monitor the output end of their activities, as well as the regulatory—that is the way we would get the consistency.

Mr. ENGLISH. We also heard complaints from some States that some State directors simply refuse to use the program. Is there any kind of review made with regard to whether or not State director are applying the various programs in a manner that is fair and equitable to all the States?

Mr. JOHNSON. Yes, sir. Through my years I've had many, many personal one-on-one conversations with State directors on various issues, if I had a sense or feeling, of something wrong. We're going to know real quick if some program is trying to be put down by a State director.

We have a very elaborate internal control system, which involves coordinated assessment reviews where we send teams in to assess and evaluate States on what they are doing on these various programs. We'll have a feeling and we'll know real quick if somebody is getting out of line. We usually know either through one of your offices or somebody is going to write us and we're going to know. We take those seriously and we follow it up.

Mr. **Kislak**. Mr. Chairman——

Mr. **Wise**. Yes.

Mr. **Kislak**. Each State director, whether he is new to the job or as Mr. Vautour calls him, a retread, is being called into Washington for training in small groups, one of the areas of that training is a discussion with Mr. Vautour, a frank and open discussion I guess is the terminology that the diplomats use where he tells them that their responsibility is to carry out the intent of Farmers Home in that State, that if they don't it is their hide. It is their responsibility to see that the program works and that it works the way it is designed to work and that it works smoothly and works well. That is being told on them one-on-one.

If there is some inconsistency in State directors, I think in any group of 46 individuals you'll find that some do a better job than others. If there are some people who are not living up to that purpose to the best of their individual ability and are throwing a roadblock I think was the word that you used in the face of the implementation of the program, certainly I would like to know about it and that State director or the program chief or wherever the problem is we'll have a frank and open discussion with them.

Mr. **English**. Well, I think that's important. The next question I wanted to ask Mr. Johnson on this.

Mr. Johnson, as you go through these applicants for State directors, is there any effort to determine whether or not these people actually support or believe in the programs that they are being asked to carry out?

Mr. **Johnson**. Yes, sir. Yes, sir.

Mr. **English**. And if they do not philosophically believe in those programs and don't really think that those programs are important are they still recommended for appointment?

Mr. **Johnson**. I have never recommended one that I didn't think could be adaptable to it. I was involved in interviewing State directors in 1981 and, of course, in this process again, and we have brought on about 25 or 35 at this point of our 46 State directors.

We have a number of people that are interviewed in that—involved in that interview process—and we all use different techniques and approaches and ask different kinds of questions.

The Under Secretary is personally involved in those interviews.

Mr. **English**. One of the difficulties that we find from time to time and we have run into this again—over the past 8 years I think that it's been quite noticeable—is we did have people in charge of programs that don't believe in those programs. They don't like the programs. They see their role namely as to dismantle the program, to in effect render the program ineffective.

I have got a great deal of trouble with that and I don't think that the President's—if we understand the President's intent and the wishes correctly and I am very hopeful that we do, obviously the President's program cannot be carried out along the lines of the President's intent if the person doesn't believe in the program.

I would hope and would encourage that the Department of Agriculture, particularly looking at people who are going to be connected with rural development, that there be a particular sensitivity with regard to making sure that we have got people who feel like they can enthusiastically support and carry out the programs along the lines that were intended by Congress when they were passed and where we all hopefully think that the President of the United States agrees with.

I think we are going to have big trouble no matter what kind of legislation we pass and where we go on the bill, obviously if you have got people who don't support that program it is not going to work. It's that simple.

Mr. **Kislak**. Mr. Chairman, I agree with you and let me add to Sox these candidates all got interviewed by a number of people. There is no candidate who is being nominated for a State director—I mean chosen as a State director who to the best of my knowledge is not a supporter of the programs and who is not a supporter of the President's goals as you elucidated them to be an activist for rural development.

Mr. **English**. I am very encouraged to hear that.

Thank you very much. Thank you, Mr. Chairman.

Mr. **Wise**. Thank you, Glenn.

I want to thank the panel very much. We will leave the record open in case you have additional thoughts you would like to submit. As I say, the purpose was to get the Department of Agriculture's viewpoint on rural telecommunications and on legislation that is being drafted and we would welcome any further suggestions or thoughts you might have.

At this point I will declare the hearing adjourned.

[Whereupon, at 1:07 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

BRINGING THE INFORMATION AGE TO RURAL AMERICA

WEDNESDAY, FEBRUARY 7, 1990

House of Representatives,
Government Information, Justice,
and Agriculture Subcommittee
of the Committee on Government Operations,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2247, Rayburn House Office Building, Hon. Robert E. Wise, Jr. (chairman of the subcommittee) presiding.

Present: Representatives Robert E. Wise, Jr., Glenn English, Gary A. Condit, Al McCandless, Steven Schiff, and Ileana Ros-Lehtinen.

Also present: Audrey Bashkin, professional staff member; Aurora Ogg, clerk; and Monty Tripp, minority professional staff, Committee on Government Operations.

Mr. Wise. This hearing of the Subcommittee on Government Information, Justice, and Agriculture will come to order.

This is a public hearing on cable television in rural America.

I thank those of you, some of whom have come long distances to be here; some of you have come short distances but it was an inconvenience on your time and I greatly—the subcommittee greatly appreciate your interest in participation.

Last June and October, the subcommittee held the first two in a series of hearings on rural telecommunications issues. The subcommittee explored ways in which advanced telecommunications can benefit rural America and it looked at legislative proposals to employ new telecommunication technologies as partner of broader rural development efforts.

With this third hearing we will examine an aspect of telecommunications technology that many Americans have come to take for granted—cable television. Cable TV began as a rural service. In its early years, cable was intended primarily to transmit broadcast television to people living in out-of-the-way locations. Since those days, cable service has evolved to become a sophisticated source of entertainment and information programming.

With its evolution cable has attracted much scrutiny, both on the Hill and off. The Federal Communications Commission recently initiated two indepth proceedings examining rates for cable service and the regulation of basic service under the "effective competition" standard. No fewer than 18 cable bills are pending before

Congress covering such issues as concentration in the industry, competition from telephone operators, rates, and regulation.

These are all pressing questions and I'm pleased to see that they are receiving attention. But I'm concerned that once again the rural consumer is being lost in the shuffle. These issues must be resolved so as to ensure that all Americans participate in cable's evolution. Cable service means more to rural America. Off-the-air television and radio programming is less available to them than it is to city dwellers. Their entertainment, cultural, and educational opportunities are narrower.

As one who resides in Clendenin, WV, and would have trouble receiving free over-the-air signals based on the mountain hollow we live in, I can testify personally to that fact.

So it's important that when we evaluate whether to reregulate cable rates, we not forget to ask whether to do so would benefit small-town America. Would lifting the obstacles to telephone-cable crossownership speed the advent of new telecommunications technologies in rural America? If so, what would be the cost to rural consumers? To help the subcommittee address these questions, I have asked rural cable and telephone system operators to give us their views.

We will also hear from the director of the consumer advocate division of the West Virginia Public Service Commission and from the Consumer Federation of America.

Finally, representatives from the Federal Communications Commission and the National Telecommunications and Information Administration in the Commerce Department will testify.

We look forward to this hearing, the start of what may be several hearings. We think the issues that will be put forward are important and will guide this subcommittee's discussions and deliberations over the next few months.

Once again I thank everyone for coming and would turn to Mr. McCandless to see if he has any opening remarks.

Mr. McCANDLESS. Thank you, Mr. Chairman. I do not have any prepared remarks.

I would comment as you have outlined, there are 18 bills before Congress. Obviously that represents a high level of interest in the subject matter. And I commend you for bringing these hearings forward. Hopefully we can resolve some of the issues in one form or another to the mutual satisfaction of those who provide and those who use.

Mr. WISE. Thank you, Mr. McCandless.

Mr. Schiff, for any opening remarks.

Mr. SCHIFF. Very briefly, Mr. Chairman.

I just want to thank you for holding this hearing because as you pointed out in your opening statement, cable television has evolved from its original intent. It's now a major factor in urban areas. Even though New Mexico is largely a rural State, most of my district is in fact urban, in the Albuquerque area and the exact role of cable, especially with respect to government; is cable something that should be regulated by government? If so, what should be regulated? Should it be franchised? Should rates be regulated? And if so, at what levels of government? These are becoming very significant issues in my district and I think in the Nation as a whole.

I'm interested in all inquiries about cable television. And I thank you for holding the hearing and thank the witnesses for coming

Mr. **Wise**. Thank you, Mr. Schiff.

We're also delighted to have the newest member of our subcommittee join us today, Congresswoman Ros-Lehtinen from the State of Florida.

Ms. **Ros-Lehtinen**. Thank you.

Mr. **Wise**. At this point our first panel will be Billy Jack Gregg, the director of the consumer advocate division of the public service commission in West Virginia. And I might add that Billy Jack comes at a very opportune time since the State of West Virginia is presently considering in its legislature legislation that would attempt to regulate in some form cable operations and would attempt to structure that legislation to meet the effective of competition standard as promulgated by the Federal Communications Commission and also Gene Kimmelman, the Legislative Director of the Consumer Federation of America.

Gentlemen, we have a policy for all witnesses in front of the subcommittee, so as not to prejudice any person who may ever testify before this subcommittee, of swearing in all witnesses.

Do you have any objections?

[No response.]

Mr. **Wise**. If you would stand and raise your right hands.

[Witnesses sworn.]

Mr. **Wise**. Thank you. If you would begin, Mr. Gregg. Incidentally, your statements in their entirety will be made a part of the record so feel free to summarize them any way you wish.

STATEMENT OF BILLY JACK GREGG, DIRECTOR, CONSUMER ADVOCATE DIVISION, WEST VIRGINIA PUBLIC SERVICE COMMISSION

Mr. **Gregg**. Thank you, Mr. Chairman, members of the committee.

My name is Billy Jack Gregg. I'm director of the consumer advocate division of the public service commission.

I'm here today to tell you principally about the results of a rate survey which my office has performed for the last 2 years.

Since this hearing is centered upon the effects on rural America of cable television, I thought I'd tell you a little bit about West Virginia.

West Virginia is probably one of the most rural States east of the Mississippi. We have a declining population of less than 2 million people. Our largest city is not over 65,000 people. Ironically, however, West Virginia has one of the largest penetrations of cable subscribership in the Nation.

Right now the national average is around 57 percent subscribership to cable systems; whereas in West Virginia some 500,000 households out of a total of 750,000 households in the State presently have cable.

This is for a number of reasons, one of which was referred to by Chairman Wise in his opening statement: Because of our mountainous terrain many of our residents cannot get any TV reception or quality TV reception.

I know that a number of people can, perhaps, get one station and get shadows of two or three others without cable.

In addition, there is an area of the State, the eastern part of the State, that is under an area of radio silence because of the national radio observatory at Greenbank.

Because of these factors, we were one of the first States to have cable television systems. They were introduced in the early 1950's.

Presently even though we are a rather small State populationwise and even though we do not have many large metropolitan areas, there are over 200 separate cable operations in the State. That's an average of about one cable company for every 10,000 residents of the State.

Cable is very important for the residents of West Virginia. We have a disproportionate percentage of older, retired, and disabled citizens in our State who depend upon television as entertainment and their outlet to the world. They also depend upon the telephone for the same thing.

Because cable television is perceived by our citizens as very important to their lives, it has become a hot topic in West Virginia.

In the past few years the number of complaints concerning cable TV to my office, to the public service commission, letters to the editors of the various newspapers around the State have increased greatly.

The major complaint has been the level of rates for cable television.

Because of this and because there was no central clearinghouse for information—there's presently no State regulatory body which has oversight over cable rates—my office undertook to do a survey of cable rates in West Virginia which shows as the starting point for the survey, 1986, the first year of effective deregulation under the 1984 Federal cable bill.

We found that since 1986 cable rates in West Virginia have risen 45 percent. The number of channels offered has risen 41 percent. During the same period of time inflation was approximately 14 percent and utility rates in our State actually declined.

We compared the cable rates in West Virginia to those attaining in surrounding States: The States of Virginia, Ohio, Kentucky, Pennsylvania. We found that West Virginians pay more per month for fewer channels than do residents in surrounding States.

It should be pointed out that most of these cities in surrounding States were in larger metropolitan areas.

So if you can define West Virginia as, per se, a rural State, then it would be a fair assumption to say that the rates for those rural customers are higher for less than they are in urban areas. However, in our survey we found no correlation between the size of the cities served in West Virginia and cable rates. Indeed, the cheapest cable rates in West Virginia were in Lewisburg in eastern West Virginia, a relatively small city. And some of the highest rates attain in Charleston, which is the largest metropolitan area. So there doesn't seem to be any correlation there.

Now I'd like to tell you a little bit about the cable regulation bill that's presently pending before the State senate. It passed second reading yesterday and will probably be passed by the full senate today on third reading. That bill attempts to fully regulate at the State level cable to the extent allowed by Federal law.

Obviously because of the FCC's "effective competition" definition, we are very limited in regulating rates if this bill is passed. However, passage of the bill will create a structure within the PSC such that if the FCC's definition of "effective competition" is ever changed, we'd be in a position to regulate rates or if the Federal law is changed, we'd be in a position to regulate rates.

In addition, we would be able to establish billing, quality of service, and other types of standards on a statewide basis. We would also provide a statewide clearinghouse for complaints which would have an impact on decisions on whether to renew franchises, to allow transfer of franchises to particular entities.

One of the problems that has followed this bill is the fact that we would be, as far as I can tell, one of the first States going from the present city franchise type of regulation to a State regulatory system.

There are presently six States which regulate cable television, but apparently the State scheme was imposed from the beginning and cities did not enter into it, or if they did, it was only after the State already had control.

One of the problems is that under Federal law cities or the franchising authority can charge up to 5 percent franchise fees. The cities do not want to lose the revenue stream which they are currently getting from those franchise fees. So an accommodation has had to be made in the bill to grandfather in those franchise fees to allow the cities to continue to receive the same amount they're receiving now.

One of the other interesting phenomena that has occurred is that there really is only a fairly small area of the State in which there is any franchising authority at all.

In unincorporated areas of West Virginia where cable is offered, counties do not act as the franchising authority. And since the State does not act as the franchising authority, there is effectively no franchising authority that exists only in incorporated cities in West Virginia. Because of very limited annexation powers in West Virginia, the area that is incorporated for each city tends to be rather small.

I would urge this committee and the full Congress to consider amendments which would allow regulation of cable television rates. And I also would urge that the control and focus of that regulation be left to the individual States under general guidelines promulgated by the Federal Government. But I believe that regulation that is closer to the people is more effective regulation.

Thank you.

[The prepared statement and survey and comparison of basic cable television rates of Mr. Gregg follow:]

CONSUMER ADVOCATE DIVISION
STATE OF WEST VIRGINIA
PUBLIC SERVICE COMMISSION
7th Floor, Union Building
723 Kanawha Boulevard, East
Charleston, West Virginia 25301
(304) 348-0526

February 7, 1990

STATEMENT OF BILLY JACK GREGG
DIRECTOR, CONSUMER ADVOCATE DIVISION
WEST VIRGINIA PUBLIC SERVICE COMMISSION
TO THE GOVERNMENT INFORMATION SUBCOMMITTEE
U.S. HOUSE OF REPRESENTATIVES

Honorable Chairman and Members of the Committee:

I am Billy Jack Gregg, Director of the Consumer Advocate Division of the West Virginia Public Service Commission. I am here today to tell you about the cable television industry in West Virginia and to present the results of a survey of cable television rates in West Virginia performed by my office.

West Virginia has a declining population of under 2 million people, and is one of the most rural and mountainous states east of the Mississippi. No city in West Virginia has a population of more than 65,000. Because of the mountainous terrain, over-the-air television reception in many areas is limited or non-existent. In addition, a large section of the state is under "radio silence" because of the National Radio Observatory at Greenbank. As a result West Virginia was one of the first states to see the introduction of cable television systems in the 1950's. At the present time, 200 cable companies provide service to approximately 500,000 households out of a total of 750,000 households in the State. This penetration level of 66% is above the national average of 57% reported by the GAO in August 1989.

Currently, no State agency in West Virginia has regulatory oversight of the cable industry. However, informal complaints to our office, letters in newspapers across the State reflecting consumer concern about the cost and quality of cable service, and the lack of useful information on the subject prompted our office to undertake a survey of cable rates in West Virgina and nearby states. The first survey was performed last year, and the response to that survey made us decide to make it an annual event.

The Consumer Advocate Division recently released the results of its second annual survey. I have attached a copy of that survey to this statement.

The CAD survey is divided into two parts. The first shows the change in the number of channels offered and the basic rates charged by cable companies in twelve West Virginia cities from 1986 (the first year of cable rate deregulation) through 1989. The second part of the survey presents a comparison of rates within West Virginia as well as a comparison of rates charged in Charleston and Huntington (the two largest cities in West Virginia) with rates charged in cities in nearby states.

The survey shows that from 1986 (the first year of cable rate deregulation) through 1989 the average number of basic service channels offered in West Virginia went up 41%, from 17 to 24 channels, while average monthly rates (excluding franchise fees and taxes) climbed by 45%, from $10.20 to $14.84. Inflation during the same period amounted to only 14.2%, while rates for utilities (electric, gas and telephone) in the West Virginia actually declined.

Lewisburg had the lowest cable rates in the state at $9.54 a month, while Milton had the highest at $19.03. Both of these cities are relatively small.

On a rate per channel basis (monthly rate divided by number of channels offered) Huntington had the cheapest monthly rate at 48¢ per channel, while Beckley was the most expensive at $1.15 per channel. Both of these cities are relatively large. It should be pointed out that the rate per channel comparisons are based on the lowest priced basic service. Almost all cable companies offered additional tiers of service (more channels for a higher price) which result in a lower rate per channel, but a higher overall monthly rate.

When compared with cities in nearby states, cable television in West Virginia is more costly and offers fewer channels. On average the non-West Virginia cities surveyed receive 26 channels for a cost of $14.26 a month, while West Virginians pay $15.72 a month for 24 channels.

From a review of the two surveys it appears that in the past year West Virginia cable companies made progress in making additional channels available to viewers, but at a price. While the average number of channels increased from 21 to 24, the average monthly rate in West Virginia climbed by $1.76, or 13%. The result is that West Virginians continue to pay higher rates for fewer channels than cable customers in surrounding states.

Dissatisfaction by consumers with the quality of service and with the large increases in rates has led to attempts to regulate the cable industry at the State level. A cable regulation bill was reported favorably out of committee last week and is currently pending before the full State Senate. Although the bill attempts to regulate all areas not precluded by Federal law, without a change in Federal law, the State cannot regulate cable TV rates, the main area of consumer concern. I urge this Committee to consider amendments to the 1984 Cable Act which would allow a greater State role in controlling basic cable rates for the benefit of consumers.

SURVEY AND COMPARISON OF BASIC CABLE TELEVISION RATES IN WEST VIRGINIA AND NEARBY STATES

JANUARY 1990

Consumer Advocate Division
West Virginia Public Service Commission
700 Union Building
723 Kanawha Boulevard, East
Charleston, West Virginia 25301

Billy Jack Gregg, Director

For the second year in a row, the Consumer Advocate Division of the West Virginia Public Service Commission has conducted a survey of basic cable television rates in West Virginia and nearby states. The results of that survey are presented in the five pages of tables attached to this introduction. The survey is divided into two parts: the first showing the change in rates and channels offered from 1986 through 1989; the second comparing rates paid in January 1990. All rates shown in the survey are for the cheapest basic service available to a normal customer. In addition, the survey does not make any qualitative analysis of the channels offered: it merely sets forth the total number of channels offered under the basic rates.

Page 1 of the survey reviewed rates charged and channels offered in twelve West Virginia cities for the years 1986, 1987, 1988 and 1989. The cities were chosen to provide a geographic and demographic cross-section of the State. 1986 was chosen as the starting point for this survey since it was the first year cable rates were effectively deregulated under the Federal Cable Communications Policy Act of 1984. The final two columns on this page show the percentage change in rates and channels offered over the four year period for each city. From 1986 to 1989 the statewide average number of channels offered increased 41%, while monthly rates climbed 45%. During the last year the average number of channels increased from 21 to 24 (14% increase), while the average monthly rate rose $1.76 (13% increase). Cable rates remained unchanged last year only in Lewisburg, Beckley, Huntington and Martinsburg.

It should be noted that during the study period franchise fees (fees charged by cities) and sales tax rates changed. For consistency's sake the rates shown on page 1 of the survey do not include local franchise fees or state sales tax. This means the rates shown on this page will vary somewhat from those actually paid by customers. The rates shown on the second part of the survey, pages 2 through 5, do include fees and taxes and reflect what a cable subscriber actually pays for basic service.

Page 2 of the survey compares the basic rate paid in each of the twelve cities in January 1990 and ranks the cities with number 1 being cheapest and number 12 most expensive. The rankings shown on this page are not affected by the number of channels offered. As shown on page 2, Lewisburg had the lowest basic rate of the cities surveyed, and Milton the highest. Lewisburg was the lowest-cost city for the second year in a row. Basic rates in Lewisburg have not changed since 1986.

Page 3 of the survey compares the basic rates in a different way by ranking the monthly rate per channel paid (basic rate divided by number of channels). This method of comparison takes account of the number of channels offered, although not the type or quality. Under this method of ranking, Huntington had the lowest rate per channel, while Beckley had the highest. Page 3 also presents the statewide average number of channels offered, average monthly rate and average rate per channel for the cities surveyed.

Page 4 of the survey presents January 1990 cable rates for Charleston and Huntington, West Virginia in comparison to basic rates in eight cities in surrounding states. Three different cable companies are shown for Columbus, Ohio since no one cable company serves the entire city and each has its own distinct franchise area. The rankings on page 4 are shown on the same basis as those on page 2, that is, only monthly rates and not number of channels are considered. On this basis, the cheapest rates shown are in Lexington, Kentucky, Cincinnati, Ohio, and Roanoke, Virginia. The most expensive are in Columbus, Ohio. Based on this comparison of monthly rates, cable in Charleston and Huntington has become relatively cheaper. Last year Huntington and Charleston ranked 8th and 11th respectively, while this year rates in those cities were the 5th and 6th cheapest.

Page 5 ranks Charleston, Huntington and the cities in surrounding states on the same basis as shown on page 3, that is, monthly rate per channel. Under this method of comparison Cincinnati, Ohio and Pittsburgh, Pennsylvania have the cheapest rates, while Columbus, Ohio still has the highest. Page 5 also presents the average number of channels offered, average monthly rate and average rate per channel for the non-West Virginia cities surveyed. A comparison of the West Virginia averages shown on page 3 with the average for non-West Virginia cities shown on page 5 indicates that West Virginia cable companies offer 8% fewer channels at a basic monthly rate which is 10% higher. The result is a rate per channel which is 20% higher than in surrounding states.

BASIC MONTHLY CABLE TELEVISION RATES IN WEST VIRGINIA 1986-1989

CITY	COMPANY	1986 # OF CHANNELS	1986 RATE	1987 # OF CHANNELS	1987 RATE	1988 # OF CHANNELS	1988 RATE	1989 # OF CHANNELS	1989 RATE	% CHANGE 1986-1989 # OF CHANNELS	% CHANGE 1986-1989 RATE
1. Beckley	Telecable Corp.	-	$9.95	-	$10.95	11	$11.95	11	11.95	-	20%
2. Charleston	Capitol Cable	11	$6.85	18	$11.38	19	$11.38	19	14.35*	73%	109%
3. Clarksburg	Clarksburg Cable	23	$12.00	24	$13.00	25	$14.00	29	15.50	26%	29%
4. Huntington	Century Cable	12	$9.45	26	$12.95	31	$13.95	31	13.95	158%	48%
5. Hurricane Milton	Triax Cablevision	15	$12.05	17	$13.95	17	$13.95	32	17.95	113%	49%
6. Keyser	Telemedia Corp.	12	$9.50	16	$13.75	16	$13.75	19	15.00	58%	58%
7. Lewisburg	Telemedia Corp.	12	$9.00	12	$9.00	12	$9.00	12	9.00	0%	0%
8. Martinsburg	Inwood Cable	20	$12.95	20	$12.95	20	$15.00	20	15.00	0%	16%
9. Morgantown	Century Cable	20	$8.40	20	$9.95	20	$9.95	29	13.50	45%	61%
10. Moundsville	TCI, Inc.	28	$10.00	30	$13.00	30	$15.00	32	17.65	14%	77%
11. Parkersburg	TCI, Inc.	-	-	24	$14.29	25	$15.00	25	17.75	-	-
12. Wheeling	TCI, Inc.	-	$12.00	-	$13.00	25	$14.00	25	16.50	-	38%
AVERAGE		17	$10.20	20	$12.35	21	$13.08	24	14.84	41%	45%

* Will go to $17.50 for 40 channels in 1990 - 1992.

NOTE: Rates shown do not include franchise fees and sales tax

SOURCE: CONSUMER ADVOCATE DIVISION
WEST VIRGINIA PSC

COMPARISON OF CURRENT RATES
FOR BASIC CABLE IN WEST VIRGINIA
JANUARY 1990

	CITY	COMPANY	# OF CHANNELS	RATE
1.	Lewisburg	Telemedia Corp.	12	$ 9.54
2.	Beckley	Telecable Corp.	11	12.67
3.	Morgantown	Century Cable	29	14.58
4.	Huntington	Century Cable	31	14.79
5.	Keyser	Telemedia Corp.	19	15.90
6.	Charleston	Capitol Cablevision	19	15.97
7.	Clarksburg	Clarksburg Cable	29	16.43
8.	Martinsburg	Inwood Cable	20	16.46
9.	Wheeling	TCI, Inc.	25	18.32*
10.	Moundsville	TCI, Inc.	32	18.71*
11.	Parkersburg	TCI, Inc.	25	18.82*
12.	Hurricane Milton	Triax Cablevision	32	19.03**

* As of January 1, 1990, known as "expanded basic service." "Basic service offers 6 less channels for a 40¢ reduction in monthly rate.

** Already effective in Milton, effective in Hurricane in Spring of 1990.

NOTE: Rates shown include local franchise fees and sales tax.

COMPARISON OF BASIC CABLE TELEVISION
IN WEST VIRGINIA
RATE PER CHANNEL
JANUARY 1990

	CITY	COMPANY	# OF CHANNELS	RATE	RATE PER CHANNEL
1.	Huntington	Century Cable	31	$14.79	$0.48
2.	Morgantown	Century Cable	29	$14.58	$0.50
3.	Clarksburg	Clarksburg Cable	29	$16.43	$0.57
4.	Moundsville	TCI, Inc.	32	$18.71	$0.58
5.	Hurricane Milton	Triax Cablevision	32	$19.03	$0.59
6.	Wheeling	TCI, Inc.	25	$18.32	$0.73
7.	Parkersburg	TCI, Inc.	25	$18.82	$0.75
8.	Lewisburg	Telemedia	12	$ 9.54	$0.80
9.	Martinsburg	Inwood Cable	20	$16.46	$0.82
10.	Keyser	Telemedia Corp.	19	$15.90	$0.84
11.	Charleston	Capitol Cablevision	19	$15.97	$0.84
12.	Beckley	Telecable Corp.	11	$12.67	$1.15
AVERAGE OF WEST VIRGINIA CITIES			24	$15.72	$0.66

NOTE: Rates shown include local franchise fees and sales tax.

COMPARISON OF WEST VIRGINIA BASIC CABLE RATES TO THOSE IN NEARBY STATES

JANUARY 1990

	CITY	COMPANY	# OF CHANNELS	RATE
1.	Lexington, KY	Telecable	11	$ 5.15*
2.	Cincinnati, OH	Warner Cable	24	$ 8.20
3.	Roanoke, VA	Cox Cable	16	$ 8.95
4.	Pittsburgh, PA	TCI, Inc.	36	$13.00
5.	HUNTINGTON, WV	Century Cable	31	$14.79
6.	CHARLESTON, WV	Capitol Cablevision	19	$15.97
7.	Richmond, VA	Continental Cable	30	$16.15
8.	Charlotte, NC	Cablevision	38	$16.25
9.	Ashland, KY	Dimension Cable	27	$16.45
10.	Columbus, OH	Warner Cablevision	12	$16.95
11.	Columbus, OH	All-American Cable	29	$19.45
12.	Columbus, OH	Coaxial Communications	40	$22.50

*Called "Lifeline Service" although there are no income requirements for subscription.

NOTE: Rates shown include local franchise fees and sales taxes.

COMPARISON OF WEST VIRGINIA
BASIC CABLE RATES PER CHANNEL TO THOSE IN NEARBY STATES
JANUARY 1990

CITY	COMPANY	# OF CHANNELS	RATE	RATE PER CHANNEL
1. Cincinnati, OH	Warner Cable	24	$ 8.20	$0.34
2. Pittsburgh, PA	TCI, Inc.	36	$13.00	$0.36
3. Charlotte, NC	Cablevision	38	$16.25	$0.43
4. Lexington, KY	Telecable	11	$ 5.15	$0.47
5. HUNTINGTON, WV	Century Cable	31	$14.79	$0.48
6. Richmond, VA	Continental Cable	30	$16.15	$0.54
7. Roanoke, VA	Cox Cable	16	$ 8.95	$0.56
8. Columbus, OH	Coaxial Communications	40	$22.50	$0.56
9. Ashland, KY	Dimension Cable	27	$16.45	$0.61
10. Columbus, OH	All-American Cable	29	$19.45	$0.67
11. CHARLESTON, WV	Capitol Cablevision	19	$15.97	$0.84
12. Columbus, OH	Warner Cable	12	$16.45	$1.37
AVERAGE OF NON-WEST VIRGINIA CITIES		26	$14.26	$0.55

NOTE: Rates shown include local franchise fees and sales taxes.

Mr. Wise. Next we will hear from Mr. Gene Kimmelman, Legislative Director for the Consumer Federation of America.

STATEMENT OF GENE KIMMELMAN, LEGISLATIVE DIRECTOR, CONSUMER FEDERATION OF AMERICA

Mr. Kimmelman. Thank you, Mr. Chairman.

Mr. Chairman and members of the subcommittee, on behalf of the consumer federation I appreciate this opportunity to testify before you about cable television.

I'm going to speak both about the general concerns consumers have about cable TV and rural concerns. They tend to mesh. There are a few peculiarities about rural consumers I'll point out but in general they are very similar.

As a general matter, we may be a little embarrassed by how much television we watch. The American people may not like to talk about it too much but it is quite clear from surveys, from market analyses, that television, particularly the package of service that's available over cable TV today has become essential to our way of life.

To receive most important news, national and local information, to receive educational programming, important cultural programming, to see the Congress in action, to receive sports and other entertainment programming, one must have cable television in the United States of America or some other technological means of delivering a similar package of services.

It has become virtually essential to everyday life in the view of a majority of American consumers.

But there are problems in the cable industry and I'd like to speak today about three fundamental problems.

One is that on the local level virtually everywhere cable is a monopoly.

Second, that there are packages of monopolies that are growing. There is horizontal concentration among a few firms who are controlling access to a large percentage of American cable television subscribers.

And third, the cable TV industry has been integrating vertically into programming; controlling some of the most popular, some of the most essential programming that it itself decides to offer over its systems.

Now, I'd like to talk a little bit more indepth about each of these problems and what we believe at the consumer federation that Congress needs to do to address these concerns.

First of all, after Congress passed the Cable Act in 1984, the FCC decided that where there were three over-the-air signals that there was effective competition to a cable system and no local government or State government could regulate basic cable rates.

The results have been quite predictable.

Cable rates have gone up on average at least two to three times the rate of inflation since deregulation. Maybe not astronomical, maybe not terrible, but compared to the era of regulation, a terrible trend we believe.

During regulation, basic rates never went up even as much as inflation: On average, less than two-thirds the rate of inflation and now running two to three times the rate of inflation.

I noticed this morning that cablevision in the District of Columbia is raising its rates now about twice the rate of inflation this year.

We expect that because there is no alternative to cable, there is no market constraint against these rate increases. And that's a major problem.

It turns out the FCC probably looked at the wrong factors when it decided to deregulate. It's not a question of getting one or two signals or three signals or four signals over the air.

It's not a question of whether you can go to the movies. We all know that we can do that.

The problem is that the market for cable is the package of services all combined, put together, including the networks, including independent stations, public stations, plus the movies, plus other entertainment, plus sports and educational programming. It's that package for which there is no competitive alternative.

In looking at nationwide data on the cost of cable systems, the cost to run them, operate them, reasonable returns, including programming costs, versus the price that they provide in the marketplace today, it's quite clear that there are excesses in the cable industry.

Our data show that if cable were subject to full competitive forces or regulated to mirror what a competitive market would provide, American consumers would be saving about $6 billion on cable revenue per year. Rates would be down about 50 percent from what they are. And we believe that needs to be addressed.

The other problems that I mentioned, horizontal concentration and vertical integration, relate to the cable industry's efforts to thwart competitive entry, to thwart effective competition to their services.

This has been done in the horizontal area by a couple of large firms, particularly TCI and ATC, which is owned by Time, Inc., which have bought up local systems. And because they control access to so many cable subscribers, they can dictate to programmers the terms and conditions under which programming is offered; effectively the price, whether it's offered, whether there have to be exclusivity arrangements, whether that programming can be made available to anyone else in the community who wants to compete with the cable operator, and importantly, to anyone who doesn't want to come in the community but wants to offer service somewhere else.

This type of arrangement has denied service to certain American consumers and has limited availability of certain cable services. This trend is ongoing. It's a tremendous danger to diversity of information over cable systems and the ability of those who do not have cable systems to receive programming from an alternative technological means.

The cable industry has also moved into the programming business itself. There is a tremendously complicated interlocking web now of who owns the most popular programming. Not surprisingly it's predominantly cable operators who have bought into this programming.

The result is similar to the horizontal area: Efforts to deny potential competitors the availability of the programming that the American people want to see.

Why would a cable operator do this? Why would a vertically integrated company want to do this?

Well, it's quite simple.

If they can reap extra profits by being the only company in the market, why would they make their programming available to anyone else?

If they can continue to demand prices in the marketplace that far exceed their costs, their monopoly is protected and under the FCC's rules, there is no regulation of their prices.

Now, a number of ideas has been proposed about how to address these three problems.

I'd like to talk first about one that we have some concerns about and then our own proposals.

A number of telephone companies have suggested that they could be potential competitors to cable systems. We believe that may be so down the road but there are a number of problems with that right now.

First of all, copper technology in the telephone system, the copper that's in the system today is not usable for broad-band video service. It's not capable of providing video signals like the coaxial cable is.

Telephone companies would have to engage in a massive investment, most likely it would be in fiber optic cable, just to be able to offer video signals. This would be quite costly.

We've just completed a study, Mr. Chairman, which I'd like to submit for the record which looks at this issue, among others, about the information age from the consumer perspective.

Mr. WISE. Without objection that will be entered as part of the record, hearing no objections.

[Referenced information, "Expanding the Information Age for the 1990's: A Pragmatic Consumer Analysis" is contained in the subcommittee files.]

Mr. KIMMELMAN. We find that in the State of Florida where Southern Bell has made such a proposal to move quickly to fiber optics to be able to offer video signals, that the speedup costs, if applied nationwide, would add $250 billion worth of costs to telephone rate payers.

Now, looked at in a very general way, that would mean that today's telephone customers on average would have to pay about $5 a month for 33 years to pay to speed up implementation of a fiber optic investment in the telephone network to be able to offer the very same service that cable offers today.

And another important problem related to that would be service would not be available in general until the turn of the century anyway.

So we could see continued overpricing of cable service in the interim plus increases in telephone rates.

We believe it's very important to look particularly at rural concerns from the perspective of what is the least cost technology to provide the services that rural consumers need and want.

From our own analysis we believe that regulating cable rates and regulating telephone rates where that equipment is already in place is the most cost effective way to go.

Where it has been too expensive to provide cable service over a wire, it appears to us that satellite technology may be the least cost technology and that rather than move into a wire line approach as a generalized pattern, we ought to look to what is the least cost approach.

The key is to make the programming available to the satellite distribution system under the same fair terms that the cable industry receives it.

It doesn't matter what the medium is, it's the end product that the consumer wants and it needs to be at a fair price.

We believe, Mr. Chairman, that it's time for Congress to act and fine tune the 1984 Cable Act to address these concerns.

We need Congress to redefine "effective competition" to include the entire package of services that consumer so clearly want and to make sure that those services are provided at a fair price.

We think it's time for Congress to make sure that cable does not have too much control over a broad subscribership base around the country so as to limit the availability of programming to alternative technologies or the breadth of programming over those systems and to ensure also that cable makes these programs available to the satellite distribution systems so that we could possibility have competition down the road.

We have supported H.R. 3826, which was introduced by Congressman Cooper from Tennessee and Congressman Shays from Connecticut, which addresses these problems. And we urged you to look at this legislation and other pieces of legislation to consider fine tuning the Cable Act of 1984.

Thank you very much.

[The prepared statement of Mr. Kimmelman follows:]

CFA Consumer Federation of America

STATEMENT OF GENE KIMMELMAN
LEGISLATIVE DIRECTOR, CONSUMER FEDERATION OF AMERICA
On Consumer Concerns About Cable Television
Before the Government Information, Justice, and Agriculture Subcommittee
of the House Committee on Government Operations
February 7, 1990

Recent developments in the cable television market make it clear that the goals of the 1984 Cable Communications Policy Act cannot be achieved unless Congress fine-tunes the Act. Growing consumer demand for the package of video services offered by cable, coupled with increased concentration and vertical integration in the cable industry, in an environment of inadequate regulation, has resulted in excessive cable rate increases and inadequate service.

The Consumer Federation of America (CFA)[1] believes Congress must act immediately to bring cable rates and industry practices in line with today's market conditions. We therefore support H.R. 3826, the "Cable Television Consumer Protection Act of 1989," sponsored by Representatives Jim Cooper (D-TN) and Christopher Shays (R-CT), which would ensure that cable rates are reduced to a reasonable level and promote program diversity and service quality.

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[1] Founded in 1968, CFA is the nation's largest consumer advocacy group, composed of over 240 state and local affiliates representing consumer, senior citizen, low-income, labor, farm, public power and cooperative organizations.

1424 16th Street, N.W., Suite 604 • Washington, D.C. 20036 • (202) 387-6121

THE CABLE MARKET

While Congress may have dealt with many of yesterday's problems in the 1984 Cable Act, it did not anticipate the combination of lax regulation, changing consumer demand and industry concentration that have undermined the Act's goals. More and more consumers want the package of video services that cable offers yet must pay excessive rates to a cable operator who monopolizes local markets by thwarting potential transmission and programming competition. If vigorous competition had developed, as the Cable Act envisioned, or its surrogate in monopolistic markets -- effective rate regulation -- were imposed, consumers would be paying about half of what they are charged today for cable services.

Consumer Demand

Television has become the premier source of information and entertainment for the American people, and cable plays an increasingly important role in meeting viewing needs. On average, consumers watch seven to nine hours of television per day,2 and recent surveys show that demand for cable is rising because of the attractive package of news, sports, cultural,

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2 Testimony of Gene Kimmelman, Communications Subcommittee, Committee on Commerce, Science and Transportation, U.S. Senate, June 21, 1989 at 22.

educational, entertainment, and specialized movie programming that cable offers.3

As cable television becomes more fundamental to everyday life, it takes on the attributes of services consumers consider necessary to function in modern society. Despite significant rate increases, cable subscribership has been steadily growing, reflecting increased income and an inelasticity of demand similar to basic phone service.4 With the national networks -- ABC, CBS, and NBC -- bundled into a basic cable package of services, television has catapulted far beyond newspapers and radio as the American peoples' primary source of news, and consumes a growing percentage of leisure and entertainment expenditures.5 As a result of this strong demand for the services that cable packages together -- news, entertainment, information and sports -- consumers increasingly view cable as essential to meet their video needs.

Competition for Offering Video Services

Despite this healthy consumer demand for a broad package of video services, there is virtually no head-to-head competition between cable companies in local markets.6 In addition, there is

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[3] Kimmelman, at 20.

[4] Kimmelman, at 25.

[5] Kimmelman, at 22-23.

[6] Kimmelman, at 13.

very little competition from other technologies that could offer packages of video services similar to cable, like satellite dish (TVRO) or wireless cable.

This lack of competition results from an aggressive cable industry strategy to monopolize the local video market. Many cable operators, acting in concert with affiliated owners of video programming, have engaged in vigorous anticompetitive actions to prevent head-to-head competition.

For example, many vertically integrated cable companies deny potential competitors access to consumers and programming or overcharge for and restrict the use of programming that is made available.[7] National Telecommunications and Information Administration (NTIA) data clearly demonstrate that American Television & Communications Corporation (ATC), the nation's second largest cable company, discriminates against its major rival Viacom by favoring the programming of its affiliates HBO, Cinemax, USA and Black Entertainment Network.[8] Similarly, Viacom favors the programming of its affiliates over non-affiliates.[9]

NTIA data also show that the nation's largest multiple system operator (MSO), which controls access to the largest viewing audience, Tele-Communications Inc. (TCI), exercises its market power over programmers by limiting programmers' access to TCI subscribers (i.e., TCI offers fewer programs to its subscribers than smaller cable operators, saving on the cost of programming, increasing profits and leveraging programmers into preferential arrangements for TCI).10

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[7] Kimmelman, at 14.

[8] Kimmelman, at 16-17.

[9] Kimmelman, at 16-17.

Allegations of anticompetitive cable practices are not limited to industry critics. Earlier this year, cable operator Viacom and its affiliated programmer Showtime Networks Inc. (SNI) filed an antitrust lawsuit against its largest chain of affiliated competitors -- Time, Inc., HBO, ATC and Manhattan Cable -- alleging a litany of discriminatory practices. Viacom's complaint speaks for itself:

> This is an action to recover monetary damages and obtain injunctive relief arising out of the illegal, anticompetitive and monopolistic activities of defendants Time Incorporated ("Time"), Home Box Office, Inc. ("HBO, Inc."), American Television & Communications Corporation ("ATC") and Manhattan Cable Television, Inc. ("MCTV"). Specifically, defendants Time, HBO, Inc., ATC and MCTV have violated and continue to violate the federal antitrust laws by engaging in integrated series of predatory and exclusionary acts and strategies designed to increase the costs of their rivals, raise barriers to entry and expansion, and otherwise entrench themselves as monopolists by anticompetitive conduct, injuring the competitive process and, ultimately, consumers. Defendants' violations of the federal antitrust laws include:
>
> i) monopolizing, conspiring to monopolize, and attempting to monopolize the market for pay television programming services ...
>
> ii) monopolizing and abusing their monopoly power in certain local markets for cable television ...
>
> iii) monopolizing and abusing their monopoly power in certain local markets for cable television to gain an anticompetitive advantage for defendant HBO, Inc. market for pay television programming services ...

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10 Kimmelman, at 18.

> iv) entering into contracts and coercing others to enter into contracts in the market for pay television programming services ...
>
> (v) entering into an Agreement and Plan of Merger with Warner Communications Inc., the effect of which will be to lessen competition substantially or tend to create a monopoly in the market for pay television programming services, in the supply of other cable television programming, and in certain local cable markets, to entrench their monopoly power ...

Cable operators engage in similar discriminatory practices to thwart competition from technologies that could offer a close substitute to cable's video wire. Satellite dish and wireless cable services, which have a multi-channel capacity somewhat similar to cable, have been blocked out of numerous local video markets because video programmers affiliated with cable operators limit availability of their programming.

For example, cable-affiliated owners of the most popular programming often refuse to deal with wireless cable or satellite dish service distributors, or block access to their programming by signing exclusivity arrangements with cable operators.[11] Time, Inc., parent of HBO, has been in the forefront of efforts to deny satellite dish and wireless cable service providers access to the most popular movie channel.[12]

While the cable industry argues that over-the-air video signals, movie theatres and the movie rental (i.e., VCR) market effectively compete with cable's package of programming, this is clearly not the case. The networks, independents and movies do offer partial substitutes for cable TV, however they cannot be packaged to compete head-on with cable.

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[11] Kimmelman, at 15-16.

[12] Kimmelman, at 15-16.

If consumers want to see their elected representatives on C-Span they must purchase cable. If they want a variety of sports, entertainment, cultural and educational programming, they must purchase cable. One can, of course, attend sporting events, go to the theatre and rent movies at substantial expense, inconvenience, incurring significant transaction costs and wasting time. To argue that this limited alternative to cable is effective competition is a little like arguing that bicycles offer effective competition to automobiles.

Concentration and Vertical Integration in the Cable Industry

Many of the anticompetitive practices described above have been made possible because of increased concentration and vertical integration in the cable industry. The largest cable operators, like TCI and ATC, control access to such a large segment of the viewing public that they can extract concessions (i.e., exercise monopsony power) from programmers who desperately need to reach a large audience to cover their programming costs. Similarly, companies that control supply of the most extensive and popular packages of programming, like Time, Inc. which owns HBO and Cinemax, extract concessions from all but the largest cable operators (i.e., exercise monopoly power), who rely on this "magnet" programming to attract subscribers.

A complicated web of mergers, integration and joint ventures between these two largest cable operators and owners of video programming has increased opportunities for anticompetitive activities. TCI controls between a quarter and a third of cable subscribers, and ATC has about a 15 percent market share.13 TCI and ATC's parent Time, Inc. each own substantial shares of Cable Value Network, the Fashion Channel, Black Entertainment Network, Cable News Network, Turner Broadcasting and Headline News, accounting for 47 percent of all subscribers, 23 percent of all basic service subscriptions and 67 percent of all pay services (See Exhibits 1 and 2). TCI and Time, Inc. avoid competing head-to-head in the marketplace by maintaining exclusive franchises and exclusive programming distribution.

This web of relationships enhances market power for both firms and creates huge barriers to entry for potential competitors. With two firms controlling access to so many subscribers and so much popular programming, potential competitors must be confident they can simultaneously finance entry into the cable operation market and the programming business to take on TCI and Time, Inc. -- an extremely risky business venture that has not and is not likely to occur.

Ironically, the cable industry believes its diversification into programming is good for the American people, while similar

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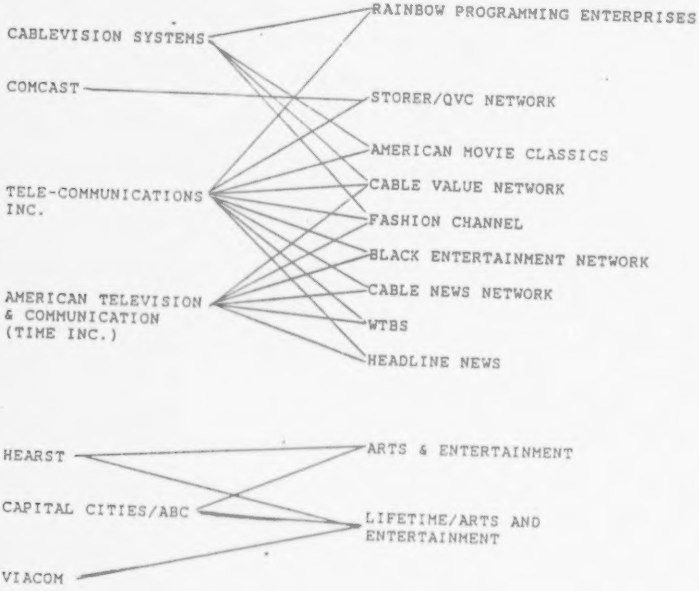
13 Kimmelman, at 6-7.

EXHIBIT 1:

JOINT VENTURES IN PROGRAMMING AMONG MAJOR CABLE INDUSTRY FIRMS


CABLEVISION SYSTEMS
COMCAST
TELE-COMMUNICATIONS INC.
AMERICAN TELEVISION & COMMUNICATION (TIME INC.)
RAINBOW PROGRAMMING ENTERPRISES
STORER/QVC NETWORK
AMERICAN MOVIE CLASSICS
CABLE VALUE NETWORK
FASHION CHANNEL
BLACK ENTERTAINMENT NETWORK
CABLE NEWS NETWORK
WTBS
HEADLINE NEWS
HEARST
CAPITAL CITIES/ABC
VIACOM
ARTS & ENTERTAINMENT
LIFETIME/ARTS AND ENTERTAINMENT

NOTES AND SOURCE: Only joint ventures are shown, wholly owned programs are not shown, but are counted in Exhibit 2 in the appropriate column. "Testimony of Jack Valenti, President of the Motion Picture Association of America," Subcommittee on Telecommunications and Finance, Energy and Commerce Committee, United States House of Representative, May 11, 1988; "Vertical Integration," in Competitive Issues in the Cable Television Industry, Subcommittee on Antitrust, Monopolies and Business Rights, Committee on the Judiciary, United States Congress, March 17, 1988, pp. 416-417.

EXHIBIT 2:

NATIONAL MARKET SHARES OF MAJOR INTERCONNECTED COMPANIES IN CABLE SYSTEMS, BASIC SERVICE AND PAY SERVICE PROGRAMMING

COMPANY	CABLE SUBSCRIBERS (000,000)	BASIC SERVICE SUBSCRIBERS (000,000)	PAY SERVICE SUBSCRIBERS (000,000)
CABLEVISION SYSTEMS	1.0	1.7	6.3
TELE-COMMUNICATIONS INC.	10.8	26.0	0
AMERICAN TELEVISION & COMMUNICATION (TIME)	4.5	0	23.9
WARNER	1.4	0	0
COMCAST	1.4	0	.2
JOINT VENTURES	2.0	186.0	10.3
TOTAL 5 COMPANIES	21.1	212.0	40.7
VIACOM	1.1	162.3	11.6
HEARST	.1	0	0
CAPITAL CITIES/ABC	0	48.8	0
JOINT VENTURES	0	65.4	0
TOTAL 3 COMPANIES	1.2	265.5	11.6
NATIONAL TOTAL	44.7	930.0	60.1
5 COMPANIES AS % OF NATIONAL TOTAL	47.2	22.7	67.4
3 COMPANIES AS % OF NATIONAL TOTAL	2.7	28.5	19.3

SOURCE: "Testimony of Jack Valenti, President of the Motion Picture Association of America," Subcommittee on Telecommunications and Finance, Energy and Commerce Committee, United States House of Representative, May 11, 1988; "Vertical Integration," in Competitive Issues in the Cable Television Industry, Subcommittee on Antitrust, Monopolies and Business Rights, Committee on the Judiciary, United States Congress, March 17, 1988, pp. 416-417.

vertical integration by the telephone industry would be anticompetitive and bad public policy. The cable industry argues that by investing in "content" (i.e., programming), cable operators have expanded the quantity and quality of programming.14 However, when it comes to local telephone company entry into the video transmission and programming markets, the cable industry has a slightly different perspective on vertical integration:

> In addition, to the extent that telephone companies compete in unregulated businesses that require use of or access to their monopoly telephone facilities or functions, they have incentives to discriminate against their competitors and to favor themselves in providing access to those facilities and functions.
>
> . . .
>
> For example, telephone companies, if allowed to provide video programming, could still use their control of essential facilities to thwart competitors.
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> . . .
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> ... there are myriad ways in which telephone companies can structure their contractual relationships and everyday business dealings with other users to give themselves a competitive advantage over such users.
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> Nor is vertical integration of the telephone company's common carrier transmission facilities with the provision of video programming likely to produce efficiencies.15

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[14] Statement of James R. Mooney, National Cable Television Association, Before the Subcommittee on Antitrust, Monopolies, and Business Rights of the Senate Committee on the Judiciary, April 12, 1989 at 71.

[15] Comments of the National Cable Television Association, Inc., In the Matter of Telephone Company - Cable Television Cross-Ownership Rules, Sections 63.54 - 63.58, CC Dkt No. 87-266 at 8,14,15,46.

CFA believes vertical integration in both the cable and telephone industries is dangerous to consumers' interests.16 Any expansion and improvement in cable programming that occurred while the cable industry became vertically integrated could be dramatically accelerated if the anticompetitive practices of vertically integrated cable companies were put to a halt.

Cable Rates

As a result of the lack of competition in the cable market and the Federal Communications Commission's (FCC) decision to deregulate cable pricing, basic cable rates have shot up dramatically beyond their historical level. Similar to other declining-cost industries, where per-unit costs decline as subscribership and viewership increases, the real dollar price of basic cable service declined in the era of rate regulation. In the decade prior to deregulation, basic cable rates rose only about two-thirds as much as inflation in the economy.17 In contrast, since deregulation basic rates have risen on average at

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16 Today we are submitting for the record our most recent study, entitled "Expanding the Information Age for the 1990s: A Pragmatic Consumer Analysis," conducted with the American Association of Retired Persons, which demonstrates the dangers of local telephone company entry in the video transmission business.

17 Mooney, at 92.

least two to three times the rate of inflation.18 Cable operators attempt to camouflage these rate increases by adding new channels to their basic tier of service, forcing consumers to pay excessive rates for programming they may not purchase if it were not wrapped into the basic tier. Even for consumers who desire the new channels added to the basic tier, rate hikes have far exceeded the added cost of this new programming.

These rate increases have resulted in excess profits flowing to cable operators. Analysis of the market price for cable systems, compared to the actual cost and reasonable profits associated with cable services, demonstrates that cable systems are earning large monopoly profits.19 If healthy competitive forces were disciplining the cable market, the revenue necessary to yield a reasonable profit would be less than half of what is currently paid by consumers in their cable rates.20 Since we currently lack competition in the cable market, reimposition of regulation designed to mirror competitive market forces could save consumers about $6 billion per year, reducing cable rates approximately 50 percent.21

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18 Kimmelman, at 26. U.S. General Accounting Office, National Survey of Cable Television Rates and Services, GAO RCED-89-193, August 1989.

19 Kimmelman, at 30.

20 Kimmelman, at 31.

21 Kimmelman, at 1,31.

ADDRESSING PROBLEMS IN THE CABLE INDUSTRY

CFA believes Congress must step in to stop the monopolistic pricing and anticompetitive practices of the cable industry. By reinstating regulation where comparable alternatives to cable do not exist, outlawing discrimination against potential competitors and limiting the market leverage gained from a large subscribership base, H.R. 3826 would help bring down cable rates and open the door to the increased competition that was originally envisioned in the Cable Act of 1984.

Until true competition for the unique package of programming available on cable develops, regulation of basic cable rates is essential to prevent price gouging. Just as Congress has a keen interest in providing consumers access to local news, public affairs, educational and other significant local broadcasting, CFA believes Congress has an equally strong interest in ensuring that national news, information and educational programming available only over cable is reasonably priced and affordable to the American people.

While Section 4 of H.R. 3826 establishes the most appropriate, fair test for when basic cable rates must be constrained, it may restrict the FCC's power too severely by preventing the Commission from developing a streamlined form of regulation. Although we have no particular preference as to where the primary locus of regulation resides, we believe it may be appropriate to direct the FCC to devise a simplified form of price regulation and more detailed functional description of basic services (e.g., local and national news, informational, cultural and educational channels) to avoid excessive complication in the regulatory process.

Sections 9 and 10 of H.R. 3826 would increase consumer access to video programming and promote maximum competition in the video marketplace, thereby increasing cable's incentives to improve quality of service. By breaking TCI's and ATC's lock on a large segment of the viewing public, Section 10 would prevent cable operators from exercising monopoly power against programmers. Section 9 would augment this pro-competitive result by preventing vertically integrated cable companies from discriminating against non-affiliated entities in the distribution of video programming.

Taken together, these two provisions would increase the diversity of programming available to consumers. By preventing discrimination against wireless cable and satellite dish service providers, Section 9 would increase the likelihood that consumers not wired by cable would have an opportunity to receive a broad package of video programming from non-wire technologies. This provision would also enhance the possibility to switch from cable to alternative video providers in wired communities, increasing cable's incentives to lower prices and improve quality of service. Section 10 would then reduce the largest cable operators incentives to maximize market power by limiting channel availability, opening up TCI's cable systems to broader viewing options.

CONCLUSION

CFA strongly supports Representative Cooper's and Shay's Cable Television Consumer Protection Act of 1989, because we believe that Congress must step in to bring cable rates back into line with costs and promote greater competition in the cable industry. Without public limitations on cable rates (i.e., a new definition of effective competition that suits cable's monopolistic market conditions) and anti-discrimination/common carrier rules for cable operators, diversity of programming will suffer and consumers will continue to be overcharged for cable services.

Mr. **Wise**. Thank you very much, Mr. Kimmelman.

There are a lot of areas to talk about.

We'll operate in the 5-minute rule.

Let me begin by asking Mr. Gregg his observation. In the State of West Virginia which I think has, as you mentioned, a pretty good rural population, do you notice any difference in service complaints from rural subscribers over those coming from urban areas? Is there any difference in the number or intensity?

Mr. **Gregg**. There's really no way to know, Congressman. As I stated, there is no statewide regulatory clearinghouse right now for complaints.

The public service commission customer relations office has just this week developed a system for classifying complaints that come in on cable. Heretofore any complaints on cable were simply answered with "We have no jurisdiction over cable. Call the franchising authority." And for people who did not live in a city, they simply had no recourse except to call back to the cable companies. So I really have no information.

Mr. **Wise**. Do you have any observation as to what happens with a person's complaint when they take that complaint to the only body that I'm aware of that can deal with it which is the FCC?

Mr. **Gregg**. I have no information there on complaints that do go to the cities. And the city I'm most familiar with is Charleston. They do have one employee whose main duties are interfacing with the cable company in handling complaints on the local level. But as far as FCC complaints, once again I have no information.

Mr. **Wise**. Mr. Gregg, the State legislature is presently considering legislation that really hangs, I think, on how effective it can be on the definition of effective competition as enunciated by the Federal Communications Commission.

In your opinion given the present free over-the-air broadcast station rule or standard, what can that State legislation effectively do?

Mr. **Gregg**. Well, there will be some areas of the State because of limited reception that will probably qualify under the present FCC rule. However, as a general statement even without a change in the FCC rule and even without direct rate regulation for most of the cable rates, I think that the State public service commission can have a good effect.

Looking at the example of Connecticut, which currently has State authority over cable regulations and has no direct rate regulatory authority, the fact that they have jurisdiction over the granting of franchises, the renewal of franchises, and approval of transfer of franchises gives them some leverage to negotiate indirect rate regulation.

In other words, "if you want to sell or buy this franchise, then will you agree to a 3-year rate moratorium or will you agree to limit your annual rate increases to less than 5 percent?"

These type of agreements have been negotiated voluntarily and stand in place of direct rate regulation. It's not as effective as direct rate regulation but we can have some positive and beneficial impact for consumers.

Mr. **Wise**. Mr. Kimmelman addresses some in his remarks and I'd like to ask both of you to comment on it, Mr. Gregg first, on the impact of permitting greater competition by telephone companies which seems to be one of the two thrusts of the legislation before the Congress. One is for reregulation of some sort and the other is for opening up the competition.

Incidentally, Mr. Kimmelman, I noted with interest, you talked about fine tuning legislation. My observation is that this is going to require major overhaul.

I had a guy in a shop the other day talk about fine tuning my car and I found out that "fine tuning" to him and "fine tuning" to me, at least as far as the rates went on that, were far different and I suspect it's the same here.

But at any rate, one of the arguments put forward by telephone companies for expanding their ability to enter into competition is that for rural areas this would mean greater enhancement to lay fiber optic cable and would bring a whole new range of services and it's not cost effective to do it simply under the regulated operations the telephone company performs now.

Would you have any comment, Mr. Gregg, on that as regards a rural State such as West Virginia?

Mr. **Gregg**. Yes. I think that we need to be aware there is a larger agenda than just altruistically solving the problem of high cable rates on the part of the telephone company. Obviously it's to get fiber into the local loop faster than it otherwise would be done.

C&P Telephone Co. of West Virginia estimated this summer that to put fiber in half of the local loops in West Virginia would cost $900 million. The present rate base of C&P of West Virginia is $900 million.

You can see that just reaching half the homes in the State would double the rate base.

This, of course, was under an accelerated force-fed scenario which is what the telephone companies are after.

I would oppose any lifting of the ban on crossownership at this time. I believe that a decentralized path to the information age is developing very rapidly in the United States and it doesn't need to be force fed, especially it doesn't need to be subsidized by local telephone rate payers.

In addition, it's going to cause an increase in rates by telephone subscribers in the short term on the promise that down the road these other services will generate enough revenues to local rates in the long run.

It's interesting to note that C&P Telephone of West Virginia is about to introduce a bill in the legislature that would allow them to keep all profits from new services introduced down the road.

So what we're looking at is a telephone company who wants to induce us to allow them to force-feed fiber and thus pay higher rates now and then take all the profits from the system that rate payers had built down the road.

I would oppose that.

Mr. **Wise**. Mr. Kimmelman.

Mr. **Kimmelman**. A couple of observations, Mr. Chairman.

First of all, if we need a new technology to provide a service that we're not getting today, I'm all for it and we would support that. We want consumers to have services.

What we're talking about predominantly here is a new technology to provide what an old technology currently can provide. And that's a problem.

There's bad news and there's good news for rural America, I believe.

The bad news is that rural America generally is not the high end of the market. And regardless of whether it's a phone company providing a service or a cable company or someone else, rural America will not get served first. There's not enough money to be made by starting in the rural regions.

The good news is that even without being allowed to provide video service phone companies are moving very quickly towards new technologies as they become cost effective. And all the Bell companies are projecting having full fiber systems about the year 2010–2015.

Without raising rates we will have a telephone network that will be video capable at that point in time and will have excess capacity. I'm sure Congress will want to look at changing restrictions then.

But until we get near that point, what we're looking at is services that are available today that are overpriced and that we need competition for, or if there's not competition, regulation.

If the phone companies can't even under the best scenario with rate payer financing from telephone bills provide the service until the turn of the century, we believe we need regulation to bring the rates down and we need Federal intervention to make sure the programming is available to satellite dish technology so we can see if we can compete through a satellite system.

Mr. WISE. Thank you.

My time has expired. Mr. McCandless.

Mr. MCCANDLESS. Thank you, Mr. Chairman.

Mr. Gregg, if I understood your testimony correctly, your final comment was you felt that the States would be able to control basic cable delivery systems and rates.

Mr. GREGG. Yes, sir.

Mr. MCCANDLESS. And that would then liken in cable to other, quote, public utilities, unquote.

The argument that seems to come forward on this is: Well, that may very well be, but you've got to understand that the gas company and the electric company, et cetera, were formed and developed and organized as public utilities to begin with; whereas, cable was not.

How would we overcome that obstacle?

Mr. GREGG. Well, I think that even though cable may not have started that way, I think it certainly has become that, at least in the provision of basic service. You may want to split out rate regulation between basic service and in the premium type channels. There may, indeed, be room for a dual type system where basic rates are regulated but the premium channels are not.

By stating that the focus of the implementation of regulations should be at the State level, I didn't want to imply that there should not be Federal standards, and indeed, the FCC will still have a very large role in this. But I think the actual implementation of rate cases and designing of rates for specific local companies should be done on the State level.

Mr. **McCandless**. You're favoring the State level over a city or county level?

Mr. **Gregg**. Yes. What we've found so far in West Virginia is that a number of cities, especially the smaller ones, the council and the mayor are even part-time positions. There may not even be a full-time employee of the city except for a secretary to answer the phone.

They simply do not have the technical wherewithal nor the legal wherewithal to deal with the cable companies in negotiations or in setting rates.

Mr. **McCandless**. Mr. Kimmelman, in your presentation you said that there were three problems as you perceived it: Monopoly, concentration, and programming.

I'll play the devil's advocate here a little bit about the monopoly aspect of it.

During initial phases of the introduction of cable service, there was a tremendous capital expenditure. So Cable Co. XYZ would come to city ABC and say: "We will put a cable system into your city but in order amortize that capital cost we need to have a contractual agreement and a monopoly for a period of 'X' number of years," which would be pretty much representative of the cable industry beginning.

As that system has improved and the technology is proceeding in leaps and bounds, there are other large, very large capital expenditures to provide an adequate level of service.

How would we be able to provide the highest level of service possible if we weren't able to give company ABC the ability to service the entire community?

Mr. **Kimmelman**. Mr. McCandless, we're not against the notion of providing a franchise to one company to serve the entire community. And that is predominantly what has happened around the country.

Our problem is the notion of after doing that totally deregulating the pricing.

If there could be competition and we could find multiple systems, multiple technologies to serve everyone, we wouldn't need the government intervention at all. We've not found that to be the case. Very few companies want to come in even and challenge a franchised cable company.

But our concern is that without any market pressures on the cable operator, we see rates floating up way beyond inflation and the need for regulation. They should have a right to a fair return. They should have a right to recover all that investment that we've wanted them to make in each community, but not excessive profits.

Mr. **McCandless**. What are your feelings about the ultimate control, the level of that control, rate setting and quality of service control?

Mr. **Kimmelman**. Frankly we believe consumers are being overpriced so much we'd like to see control at any level at this point.

Mainly what we're looking for is a workable solution. We don't want to see a major bureaucracy created anywhere to try to deal with this. As far as we can tell, although some cities did an excellent job in regulating cable rates, they very seldom did very careful cost analysis as many State utility commissions do for other utilities.

So we think if there's a way of devising a simplified model that would deal with the generalized costs of cable the FCC may be able to provide guidance, maybe to set a price limit even, and there ought to be some local variation. Whether it's at the State level or the local level I think is a matter of resources and what's most cost effective.

Mr. McCandless. Thank you.

Mr. Kimmelman. Thank you.

Mr. Wise. Thank you very much.

We've been joined by two additional members of the subcommittee, a former chairman of the subcommittee and himself very active in rural development issues obviously, Glenn English of Oklahoma, and also joining us is Gary Condit of California.

We're delighted to have you both.

Glenn, we'll turn to you for any questions.

Mr. English. Thank you, Mr. Chairman. I appreciate that very much.

Mr. Kimmelman, it seems to me the issue we're looking at is the question really of how we can best make available to people living in rural America all aspects of telecommunications. How can we take all these advantages that are developing and make it possible for people in rural areas to have those, to have access to them?

I think there is the tendency with regard to the breakup of AT&T and the process that we've taken to let rural America become a backwater as far as communication markets are concerned; that competition is really in the major metropolitan areas. And there's very little desire to move into building the latest and most modern up-to-date advantages in communications and to make that available in the rural area because there's simply no competition.

That is really the major issue we're looking at: How can we put together a system that is a combination of different services that make that possible so that we've got fiber optics available and we've got all of these other advances available which then in turn are going to make it possible for us to do some new things; for example, in my district Gene South is going to be talking about this when he comes up in the next panel. We teach by using fiber optics in a number of our small rural classrooms and it's working out very well. You get a two-way exchange. And a number of our medical facilities out there are depending heavily upon these kinds of advances.

Does it all fit together that way? Is that apt to be one of the overriding factors or should we simply look at it: Well, it's cable TV versus making this available through the telephone companies?

Mr. Kimmelman. I think you're absolutely right. It's a matter of providing services and any combinations that would be the least cost way of doing it, the best way of serving the broadest needs in the community.

What we're finding is it's extremely complicated since the breakup of AT&T and the Cable Act was passed. We've got new technologies out there and we've got proposals for infrastructure development that may be different in urban areas and rural areas. There may be a different way of meeting those needs at the lowest cost.

What we're finding in rural America is that although it may not sound as sexy as pure fiber optics systems everywhere, that there's a patchwork of technologies that may be the best way of going: Cellular radio and satellite transmission.

I think that with more competition in the marketplace in consumer electronics and in telecommunications in general you'll see new technologies and new combinations.

We're mostly worried about setting on one course that could be very costly and may not be the least cost way of going that will not be in the best interest of each community down the road.

We'd like to see a flexible system evolve.

The benefit in the cable area is that you still have local franchising and you still have obligations under the Cable Act to provide service everywhere and to upgrade quality.

Cable systems are moving to fiber optics. Telephone companies are moving to fiber optics.

Our main concern is that where there's not competition that we have the right government intervention to provide fair pricing and access to those services as broadly as possible.

Mr. ENGLISH. I had a number of my cable companies express concern to me that under the loop circumstances they would not be able to compete; that in fact, you know, much of their cable is hooked to telephone lines and they get all kinds of problems. It's simply if you have a line running anywhere, it's easier to go ahead and use that line instead of stringing another line and that makes it unfair competition.

Mr. KIMMELMAN. Mr. English, that's absolutely true. We find wherever there's a wire there that's functional today, a copper wire for telephone, a little bigger copper wire coaxial cable for cable, it is cheaper to stick with those and use them as long as you can use them than putting in a third, new line.

There's no question about that.

And there's a history of discrimination as between the different industries obviously to get a bigger market share and to thwart competition.

But what we find is that the biggest problem is the FCC has deregulated cable rates, they've shot up, and there is no real alternative. Satellite programmers have had difficulty getting the programming that cable owns to provide an alternative. That's where we think the immediate needs are and we need to rectify that.

Mr. ENGLISH. I guess the question I'm asking though is this: does this put you in a situation where you have unfair competition? You mentioned on the one hand government deregulation, you insinuate that we've had cable companies that have taken advantage of situations in their rates simply because there's no competition.

If we go ahead and make this adjustment and allow the telephone companies to carry television programming and getting into all of these extra areas, is that unfair competition as far as the cable companies? Can a cable company compete with a telephone company under those circumstances? In particular can you do that with regard to a company that may be receiving assistance from the REA?

Mr. **Kimmelman**. We think the difficulties of tracking costs would be so immense if a telephone company provided all these services, not out of any bad intent but out of the natural profit motive, it would be likely to act anticompetitively and to seek too much control over its own wire. So we don't think that's the appropriate route to go.

If we've got the cable wire in place and we've got the phone wire, let's use them and let's keep them separate and keep the prices fair.

And if there's anywhere we see a potential for short-term development and competition in the video area, it's from the satellite industry, not from the telephone industry.

Mr. **English**. But doesn't that in turn make it more costly and less likely that we're going to see the development of a lot of advanced communication techniques? The whole purpose is if you can offer these services, you have a phone company out there being able to do a lot of different things and then they're going to be in a position to modernize, update, and come out a better service as far as the consumer?

It sounds to me like what you are saying is: "Well, we need to regulate both. We have one do one and one do the other. One cable company is delivering service. You don't let the telephone company in it."

It sounds to me like you're trying to come down on both sides of the fence.

Mr. **Kimmelman**. Mr. English, I think it works pretty well because we don't want to thwart technology. We just don't want to speed it up too fast if it's not cost effective.

What we're finding is that early in the 21st century phone companies, including the small, rural, independent phone companies, are likely to be putting in full fiber systems if the cost trends continue as they are today, coming down for fiber optics. That means you'll have phone companies that will be capable of offering video services not too far down the road. The real question is: Do you need to speed up that investment?

As long as the cable wire is there and functional and provides the services consumers want, let's utilize that and not throw it away and not throw away a perfectly good telephone wire either and raise costs for no good reason other than maybe speeding up telephone company investment.

So regulation probably is a short-term and maybe a middle-term goal that's necessary to keep prices reasonable. But it will not thwart technology. Phone systems appear in all respects to be going fully fiber optic and video capable in the 21st century.

Mr. **English**. Well, I have had a lot of telephone companies that have told me, rural phone companies, that they simply don't think they can offer fiber optics. It simply doesn't pay by itself. So if they have to install a fiber optic system and that's their initial investment, it's too expensive to do so.

However, if they can install a fiber optic system and combine it with providing television service and they acquire revenue off of that in competition with television cable, if they then are able to plug it in to the local hospital, then it becomes possible for them to offer it to the community.

If they offer it to the community, then you hook up the school systems. And if you hook up the school systems, then you're going to have a virtual explosion of subjects that are going to be offered to rural students that you can't offer today.

Now, how do we weigh all of these?

On the one hand you are over here looking at the consumer and you're saying, "Well, guys, the consumer is going to be better taken care of if we just don't go too fast and we want to make sure we have that and we want to make sure we have got that."

What about the students? We have education in this country being given a priority. We have got many rural communities in my district who are losing their schools. We have before the Oklahoma State legislature right now a sizable tax increase trying to make some substantial advances.

Do we tell the students out there, "Well, you know, you wait on into the 21st Century and maybe by that time we'll have fiber optics out there so you can talk back to a teacher?"

Mr. KIMMELMAN. Mr. English, I don't think we should wait.

We've looked at all of the services that are being proposed and what we find is that taking into account the revenue phone companies expect from offering video services, there still is a quarter of a trillion dollars unaccounted for to be recovered in speeding up development of fiber optics. That turns out to be $5 a month over 33 years for every consumer in this country to pay to speed things up about 10 years.

If it were to offer services that we can't get any other way, we'd be all for it.

Mr. ENGLISH. How about those services you can't get any other way?

Mr. KIMMELMAN. Those services can be provided over cable. They can be provided over satellite. The question is how much do they cost today and is anyone willing to finance it?

Mr. ENGLISH. I'm going to disagree with you. You cannot provide a two-way exchange between a student and a teacher over satellite. It's one-way teaching. The student is simply looking at the tube. There is nothing there so he can interact with the teacher. There's no way he can respond to the questions of the teacher as he would in a normal classroom.

So in fact what you're telling me is that my students in rural areas should settle for an education that is less than what he can receive in an urban area.

Mr. KIMMELMAN. No, sir. The best technology that we have right now is to be watching cable television and communicating back and forth over the telephone. That is true. It's not a full two-way interactive system. But the costs that I just gave you were for pure fiber optic transmission. To switch a signal, video signal we have not developed that switch yet. It's technologically not possible and the cost estimates are enormous.

What I described as a quarter of a trillion dollars gets you closer to a trillion dollars when you start anticipating that switching cost. That technology just isn't there yet. If it were, you know, we'd be happy to look at it to see if it really offered that service. But as yet the best we have is a system where you have one wire that transmits video and another wire that will allow you to speak as you watch it or separately back and forth. There is no better technology in an urban area than in a rural area for those kind of services.

Mr. **English**. Thank you, Mr. Chairman.

Mr. **Wise**. The gentleman from New Mexico, Mr. Schiff.

Mr. **Schiff**. Thank you, Mr. Chairman.

Gentlemen, I just want to make sure I have clear the rules that are in place now and the situation as it's in place now.

It's my understanding that the cable companies, whoever may have a franchise where there is a franchise, own the cable itself. Is that right?

So this means that unless the law changes to require them to carry other cable transmissions where one cable exists, that means cable versus cable competition is not practical. Is that right?

Mr. **Gregg**. Unless a second one wire is laid.

Mr. **Schiff**. Which would be an enormous expense for somebody?

Mr. **Gregg**. For somebody, right.

Mr. **Kimmelman**. That's correct.

Mr. **Schiff**. Given that fact, is my understanding correct that under current Federal law no State or local body can regulate cable rates even where there's a franchise where there also exists at least three over-the-air channels. Is that correct?

Mr. **Gregg**. That's correct.

Mr. **Schiff**. So in theory—and I stress again this is in theory, I'm not adopting this as a position necessarily—where cable rates are going up, and they're going up dramatically in my community and I take it most other places, too, in theory consumers who are complaining about that could be told, "If you don't wish to pay the higher rates, simply discontinue your cable service and you'll still have at least three over-the-air channels," that are on would have in the Albuquerque area. That could be an answer. Is that right?

Mr. **Kimmelman**. That is generally the answer, given that rule.

Mr. **Schiff**. However, the consumers seem not to feel that's an acceptable answer. They seem to think and perhaps correctly—I'm trying to evaluate all of this and ask you not to read between the lines in my questions—but the consumers who I am dealing with seem to feel that cable is a utility like gas and electric and telephone service and they have a right to it for a payment, of course, but under a reasonably controlled payment.

Is this the reaction, say, in West Virginia, Mr. Gregg?

Mr. **Gregg**. Yes. This has been the subject of much consternation among my staff. They can't figure out why people seem to be more concerned about television, which a lot of people take as a pure luxury, than they are about basic electricity, gas, telephone rates. And it may simply be a function of the fact that those basic utility rates have actually gone down in absolute terms as well as real terms; whereas, cable has gone up.

But I think it's also because as was referred to earlier by Mr. Kimmelman, television has become such an integral part of people's lifestyles and especially people who are somewhat limited in their ability to go out. That is their connection to the world and they feel very strongly about it.

Mr. **Schiff**. I guess what I'm getting at is, if I would try to translate what is the public attitude, the public attitude is that cable television is like other utilities. And if other utilities were skyrocketing in cost, we might be hearing from them.

This means to me two things: No. 1, that the public is willing to pay a cable fee. That is, even though over-the-air channels are free, the public seems to be willing to write a check for the cable service. They're not objecting to that as such. They're not suggesting cable should be free. But they are suggesting that in some way, shape, or form cable rates be monitored as are, at least in my State and I assume other States, electric and gas rates.

I guess that's half rhetorical and half that's my perception of the public attitude in my community.

Would you agree that's a general public attitude?

Mr. **Kimmelman**. Yes, Mr. Schiff. That is a general attitude. And I think Mr. English hit on it awhile ago as partly why. You can get three over-the-air signals but what you get on cable is the three over-the-air signals plus you also get educational programming which a lot of kids need for school now. You get up-to-date news. You get to watch C-SPAN and watch the Congress in action.

That's the only way you get that package together. There's no other way of doing it.

Mr. **Wise**. That's a big seller at home.

Mr. **Kimmelman**. That's right.

[Laughter.]

Mr. **Schiff**. A big reason why we have to preserve cable TV. I understand.

My mother from California always calls and tells me what she thinks of the color of the suit I'm wearing and how I look on a given day.

Well, Mr. Chairman, that's all the questions I have. But I just want to make a proposal with respect, if you believe that it's within the jurisdiction of this subcommittee, I'm aware that this is a hearing on cable television in rural America. This is becoming such an important issue, especially in terms of defining the role of all the players: The government, cable television, and so forth, that I would urge you to consider holding a general hearing on cable television throughout the United States and what laws should and should not apply to it given the legislation that's pending.

Mr. **Wise**. I would be glad to work with the gentleman on that. There are some hearings, of course, that are already being conducted and proceedings underway in the Energy and Commerce Committee but I think that under our jurisdiction to oversee the Federal Communications Commission we certainly do have jurisdiction.

Mr. **Schiff**. Thank you, Mr. Chairman.

Mr. **Wise**. The gentleman from California, Mr. Condit.

Mr. **Condit**. I would just ask a couple of quick questions.

There is presently a rule that prohibits telephone companies from offering cable service except in communities of 2,500 persons or less. Would you all be in favor of raising that limit to any figure and why? Mr. Gregg?

Mr. **Gregg**. I have no problem with allowing small telephone companies to expand their provision of cable service. In West Virginia there's presently one such company, Armstrong Telephone Co., also offers Armstrong Cable. This may be a way to get some of the outer rural areas into cable.

I would like to just respond briefly to one thing that was raised by Mr. English about whether we are locking out rural areas from the advantages of the information age.

As lot of the things he had mentioned, the tying together of schools into networks, in effect consolidation by television; these things are happening right now in West Virginia, one of the most rural States in the Nation.

C&P Telephone recently announced a partnership with the Parkersburg and Wood County School System and the Parkersburg branch of West Virginia University to tie those together in a fiber network, an interactive fiber net.

We presently have 79,000 cable miles of fiber optics in West Virginia under present regulatory schemes. That is far above the percentages in other Bell Atlantic companies.

We presently have over 60 percent of all the access lines in the State hooked into digital switching equipment.

C&P has eliminated all of its party lines in West Virginia as of November last year.

So that under present nonforcefeeding of fiber into the local loop, we are making advances into the information age.

The question is the cost of putting fiber into every local loop and to every home. We can do the hospitals. We can do the schools. We can do the universities at not very much cost and at immediate benefit.

The questions, though, are as Mr. Kimmelman raised. How much are we going to pay and when are we going to pay it and who's going to pay it?

Mr. ENGLISH. I think that is a good point. I think there is no question that, as I said, in my own district we've had a development similar to that and Gene South maybe will talk about that, I'm sure.

But the point that I'm making is this, we have this tendency, and still do, I think, to look at these issues as though they are isolated.

The question is are we going to deliver cable TV? Are we going to have three network stations that are going to get all MTV and HBO and all of the other stuff that goes with it and for what price?

I think the issue in rural areas is far broader than that. I think the real question that we come down to is how much are we going to be able to offer in rural communities and at what price?

The point that I guess I'm trying to make and ties in even further, it's not just a question of whether it's going to make possible education, whether it possible health services or cable TV but the other issue which goes much further—which the chairman and I have joined in some legislation—the question is if you have fiber optics, you are in the ballgame. You have got a chance. You can have some outfit from New York that may want to build new facilities in your rural community.

It means jobs.

It means a chance that rural development may grow.

It means we may be able to stop the hemmorhaging of 5 million people that we lost in the 1980's.

So it's a big, big issue and I think that it's not too much to say that at the very core of this question, the very essence of whether or not a rural community has a chance to grow and prosper or whether they're doomed to die, may in great part be determined by what kind of communications facilities they have.

That's why I think the thing we have got to look at is not just the question of consumers and how much they pay and what this competition is going to do.

The real question is—and I would agree with you as to deregulation—the question we come down to is the question of what kind of combination and mix do we put together that makes it possible for us to have the greatest opportunity for a community to survive.

If you don't have a school, you're dead.

If you don't have a hospital, you're dead.

If you don't have young people, you're dead.

If you don't have a communications system that allows for growth, you're dead.

What all of that cooks down to is to a great extent the future availability of a modern, up-to-date communications system.

Mr. GREGG. I completely agree with you.

Mr. WISE. Thank you. And I thank the panel very much.

Mr. WISE. Thank you very much.

Mr. KIMMELMAN. Thank you, Mr. Chairman.

Mr. WISE. The next panel representing those involved in the telephone industry will be Kenneth Lein, general manager of Winnebago Cooperative Telephone Association, representing the Organization for the Protection and Advancement of Small Telephone Companies, and Gene South, executive vice president of the Panhandle Telephone Cooperative, Inc.—I believe that's Oklahoma, isn't it, Mr. English?

Mr. ENGLISH. Yes, indeed.

Mr. WISE. Representing the U.S. Telephone Association.

As I mentioned to the previous panel, we have a practice of swearing in all witnesses. If you have no objection, if you'd stand and raise your right hand.

[Witnesses sworn.]

Mr. WISE.Mr. Lein, if you would like to begin. And as I say, your written statements in their entirety will be made part of the record so feel free to summarize in any way you wish.

I would ask Mr. Lein, "Winnebago," is that Iowa?

Mr. LEIN. Yes, it is.

Mr. WISE. All right.

STATEMENT OF KENNETH L. LEIN, GENERAL MANAGER, WINNEBAGO COOPERATIVE TELEPHONE ASSOCIATION, REPRESENTING THE ORGANIZATION FOR THE PROTECTION AND ADVANCEMENT OF SMALL TELEPHONE COMPANIES

Mr. LEIN. Mr. Chairman, members of the subcommittee, my name is Ken Lein and I am the general manager of the Winnebago Cooperative Telephone Association of Lake Mills, IA, which is a member of the Organization for the Protection and Advancement of Small Telephone Companies.

OPASTCO is a national trade association of more than 420 independently owned and operated telephone companies serving rural areas of the United States. Our members, which include both commercial companies and cooperatives, range in size from less than 100 to nearly 50,000 access lines and together serve more than 1.7 million customers.

Recently the cable industry has drawn much attention and come under fire for overpricing and poor quality service. This is one of the reasons OPASTCO conditionally supports lifting the ban on telephone company crossownership of cable systems. Lifting the crossownership ban is in the public interest because it will expedite technological development and help ensure such advanced services are available to all Americans, especially our rural citizens.

Providing rural communities with the same advanced services as their urban counterparts will make rural America stronger and more competitive. In fact, removal of the restrictions would advance the goal of getting fiber to rural homes by helping to cover the cost of network modernization.

My company's copper facilities are aging and we are trying to replace them with fiber. This can be done faster and more economically if we are permitted to provide telecommunication services, television, and broadband data services over one fiber facility.

Maintaining separate nonintegrated facilities is redundant and inefficient. Many small companies may not be able to build state-of-the-art infrastructures under such conditions. As a result, rural communities may go without advanced telecommunication access and businesses may choose to take their jobs to the cities.

Telephone companies providing cable television should not be considered just a marriage of convenience but it is a vital stepping stone towards the information age, a platform for competition.

Cable television service would be available to more of rural America if telephone companies were able to provide cable service.

Many small systems have taken advantage of the rural exemption to provide video services in their telephone service areas. Due to the rural exemption of 2,500 or less, more than 200 telephone companies currently provide cable in many rural areas neglected by large MSO's. However, large cable companies are also avoiding rural areas with populations greater than the rural exemption since they consider these regions less profitable markets.

Therefore, raising the rural exemption will allow more small telephone companies to provide cable to more citizens.

Removal of the crossownership restriction with conditional safeguards will also give telcos a better opportunity to continue network modernization as well as research and development for advanced services.

Most cable companies face no competition and telephone companies are denied access. Both have little incentive to invest in R&D into advanced services and network modernization.

Telco entry would encourage phone companies to merge their existing narrowband network with broadband capabilities.

Rural infrastructure development would then be as efficient and coordinated as urban-based systems.

A few policymakers would solve the abuse of a few cable operators by reregulating the entire industry. Subjecting small cable systems to regulation designed for urban-based systems, however, would adversely affect service in rural areas.

"Tier 1" regulation, for example, could hurt small cable operators since many of us offer only one tier of service.

Forced carriage requirements would deplete our limited channel capacity and require us to build expensive receiving antennas to pick up digital distant signals that may not even be of interest to our viewers.

Although some see regulation or reregulation as a short-term solution to cable's anticompetitive practices, it would very easily become too burdensome for rural cable operators.

Regulation in low-density areas, such as Iowa and Minnesota, is not cost effective.

Winnebago Cooperative Telephone Association—the system that I manage—serves 6,400 telephone customers and nearly 1,000 cablevision customers within our service territory. Our basic service rate, even in this low density, high cost area, is $12 per month; whereas, the average cable rate across the United States is over 20 percent more per month and rising.

In addition, the larger systems have lower costs, higher densities, and have easier areas to serve.

Our opponents argue that if the prohibition is lifted, telephone companies will discriminate against their telephone customers.

In our years of operation, to my knowledge no one has ever made that claim against my company. In any event, there are sufficient Federal and State regulatory safeguards that protect telephone customers from such conduct.

It is time to open up cable television services to telephone competition and I support legislation that would do this. In fact, one of the goals of the 1984 Cable Act was to foster competition in the television marketplace.

Instead of moving to realize that goal, several bills pending in the House and Senate plan to reregulate cable television services.

Reregulation of our cable system would not help our rural customers. In fact, it would undoubtedly add to the cost of providing that service

In conclusion, OPASTCO supports lifting the telco/cable crossownership ban with conditions.

Any legislation that removes the restrictions should include safeguards for small cable operators.

OPASTCO believes that oversight can be vested in local regulators using the following provisions on small cable systems.

One idea would be no regulation of rates if the rates were increased at a cumulative equal to 5 percent or less over inflation or if 10 percent of the cable subscribers submit a formal complaint to the appropriate franchise authority then the body could choose to regulate tier 1 service for a specific amount of time.

To remain competitive in the information age and global economy, our Nation's economic engines will be driven in part by the telephone industry's ability to provide new information services to all customers. Advanced telecommunications should not be limited to large cities but should also play a role in the development of rural America. The lives of rural Americans will benefit generally as information access removes some of the isolation of remote communities and helps revitalize business activities.

I thank you for this opportunity to comment and I'd be pleased to answer questions at the appropriate time.

[The prepared statement of Mr. Lein follows:]

WRITTEN STATEMENT OF

KENNETH L. LEIN
MANAGER OF THE WINNEBAGO COOPERATIVE
TELEPHONE ASSOCIATION

ON BEHALF OF THE
ORGANIZATION FOR THE PROTECTION
AND ADVANCEMENT OF SMALL TELEPHONE COMPANIES
(OPASTCO)

REGARDING
CABLE TELEVISION SERVICE IN RURAL COMMUNITIES

BEFORE THE
GOVERNMENT INFORMATION, JUSTICE,
AND AGRICULTURE SUBCOMMITTEE

UNITED STATES HOUSE OF REPRESENTATIVES

FEBRUARY 7, 1990

WRITTEN STATEMENT OF KENNETH L. LEIN
OPASTCO Member Representative
February 7, 1990

The Small Company Perspective

Mr. Chairman, members of the subcommittee, my name is Kenneth Lein. I am General Manager of the Winnebago Cooperative Telephone Association in Lake Mills, Iowa, which is a member of the Organization for the Protection and Advancement of Small Telephone Companies. OPASTCO is a national trade association of more than 420 independently owned and operated telephone companies serving rural areas of the United States. Our members, which include both commercial companies and cooperatives, range in size from less than 100 to nearly 50,000 access lines and together serve more than 1.7 million customers.

Recently, the cable industry has drawn much attention and come under fire for overpricing and poor service quality. This is one of the reasons **OPASTCO *conditionally* supports lifting the ban on telephone company cross-ownership of cable systems.** A conditional lifting the cross-ownership ban is in the public interest because it will expedite technological development and help ensure that more advanced services are available to all Americans, especially our rural citizens. Providing broadband communications, such as cable television, is a crucial ingredient in bringing advanced telecommunications to rural communities.

Providing Rural Communities With Broadband Telecommunications

Providing rural communities with the same advanced services as their urban counterparts will make rural America stronger and more competitive. Allowing rural telephone companies to carry entertainment television could spawn additional services to rural customers otherwise not available. Educational courses, interactive tv, video-on-demand and even HDTV could be bundled onto a fiber network stretching into the rural communities. In fact, removal of the restriction would advance the goal of getting fiber to the rural home by helping to cover the costs of network modernization.

My company's copper telephone facilities are aging and we are trying to replace them with fiber. This can be done faster and more economically if we are permitted to provide telephone communications, television and broadband data services over one fiber facility.

Maintaining separate, non-integrated facilities is redundant and inefficient, particularly in rural areas. Many small companies may not be able to build state-of-the-art network infrastructures under such conditions. As a result, rural communities may go without advanced telecommunications access and businesses may choose to take their jobs to the cities. In fact, telecommunications access is now a key incentive to determining where a company locates its business.

The information and broadband services of the future are taking shape as the industry continues to develop fiber systems and ISDN, a sophisticated digital network structure. Such networks will merge the capabilities of the computer, publishing and communications technologies and will allow consumers to plug a television, alarm system, personal computer and telephone into the same wall socket.

Telephone companies providing cable television should not be considered just a "marriage of convenience," but it is a vital stepping stone towards the information age, a platform for broadband competition. Interactive TV located both in classroom conferencing centers and the home could advance rural education by allowing students to conduct extensive information searches or even simulate a chemistry experiment. A school district suffering from a shortage of math teachers could use classroom conferencing centers to access lecturers outside the county area. A family in Alaska could access all of the nation's accumulated knowledge by dialing the Library of Congress in Washington. Digital film libraries and customized television feeds would provide consumers with tailorized video information retrieval. Rural hospitals could access distant specialists and receive on-line medical advice or even diagnose using HDTV cameras.

In the last several years, nearly all of these services have been used or tested in some of our nation's larger cities. OPASTCO members are working hard to provide the same services and advanced technologies to the rural communities, but there are a number of hurdles facing the development of advanced rural telecommunications networks and services. Since the future network will deploy fiber, for example, OPASTCO realizes that getting fiber to all homes is the key to the information age.

The Development Of The Information Age Should Be Universally Available To All Citizens Throughout The Nation

In the last several decades the world's industrial growth has become increasingly linked to communications and information. To remain competitive in the "information age" and global economy, our nation's economic engines will be driven, in part, by the telephone industry's ability to provide new information services to all customers. Advanced telecommunications should not be limited to large cities, but should also play a major role in the development of rural America. The telecommunications infrastructure in rural America will be central to the prosperity and competitiveness of small communities. Maintaining strong rural telephone and REA programs is vital to rural America and small independent telephone companies. To continue new service and network development there must be continued capitalization for the Rural Telephone Bank and loans for the REA fund.

We also urge the Congress to extend the concept and policy of *universal service* to new services and make sure it is implemented in developing a nationwide intelligent network. Congress has long promoted and protected the concept of universal service, which requires reasonably priced telecommunications services to all the people throughout the nation. The universal service commitment reflected the governments recognition that telephone service was a virtual necessity of modern life. The nation's telecommunications policy for the information age should broaden the concept of universal service now that advanced services are offering more than basic voice communications. To deprive rural citizens access to the new services in the Information Age has the effect of creating a class of the information rich and the information poor. The universal service mandate is a public interest standard that should be extended to include an "information rich network" that will bring growth and vitality to rural communities across the country.

Eliminating The Cross-Ownership Ban Is In The Public Interest

Cable television service would be available to more of rural America if telephone companies were able to provide cable service. Many small telephone systems have already taken advantage of the rural exemption to provide video services in their telephone service areas. Due to the rural exemption for communities of 2500 or less, more than 200 small telephone companies currently provide cable in many rural areas neglected by large MSOs. However, large cable companies are also avoiding rural areas with populations greater than the rural exemption since they consider these regions "less profitable" markets. Therefore, raising the rural exemption will allow more small telephone companies to provide cable to more rural citizens.

Many of the small telco-owned cable systems already operate in areas that the larger cable companies would not serve because of high costs and low population density. Although larger cable companies had an opportunity to serve those areas they did not take advantage of that opportunity. In some small communities that are served by cable firms, their penetration rate tends to virtually stop when it hits 65-to-75 percent of total population. It is obvious to say many MSOs are concentrating on the consumers and markets which are the most profitable.

Removal of the cross-ownership restriction with conditional safeguards will also give telcos a better opportunity to continue network modernization as well as research and development for advanced services. Since most cable companies face no competition and telephone companies are denied access, both have little incentive to invest R&D into advanced services and network modernization.

The cost of fiber would result in lower not higher costs since the uses of the bandwidth are virtually unlimited and the maintenance is cheaper than coaxial. In addition, the total cost should decrease as more services are carried on the network. Telco entry would encourage phone companies to merge their existing narrowband network with broadband capabilities. Such a design will reduce redundancy costs. Rural infrastructure development would then be as efficient and coordinated as urban-based systems.

BEST COPY AVAILABLE

WRITTEN STATEMENT OF KENNETH L. LEIN
OPASTCO Member Representative
February 7 1990

Re-Regulation Could Be Harmful To Small Cable Systems

Not all cable systems have been accused of unfair and anti-competitive practices. A few policy makers would solve the abuse of a few cable operators by re-regulating the *entire* industry. Subjecting small cable systems to regulation designed for large urban-based systems, however, would adversely affect service in rural areas.

"Tier I" regulation, for example, could hurt small cable operators since many of us offer only one tier of service. Requiring cable operators to compromise channel positions is an unfair benefit for the broadcaster and is technically difficult and expensive. Finally, forced carriage requirements would deplete our limited channel capacity and require us to build expensive receiving antennas to pick up distant signals which may not even be of interest to our viewers.[1] According to several OPASTCO member companies:

> *"Local broadcast station's flourish in urban areas since large cable operators have the technical resources to retransmit their signals with relative ease and expense. Small cable operators, alternatively, must build expensive facilities to receive the closest "local" broadcaster's signal which can be as far away as a hundred miles or more. When a broadcast signal is to be retransmitted by a cable system, the signal should be delivered to the principal headend in a manner that affords acceptable quality retransmission and does not require the cable operator to build additional facilities. The definition of "local," therefore, should be subject to the broadcaster's ability to provide a proper signal that is acceptable to Federal Communications Commission (FCC) quality requirements."*

Although some see re-regulation as a short-term solution to cable's anti-competitive practices, it could very easily become too burdensome for rural cable operators. Regulation in low density areas, such as Iowa and Minnesota, is not cost effective. Winnebago Cooperative Telephone Association, the system I manage, serves 6,400 telephone customers and nearly 1,000 cable television customers within our service territory. Our basic service rate even in this low density, high cost area is $12.00 per month, whereas, the average cable rate across the U.S. is over 27 percent more per month and rising. In addition, the larger systems have lower costs, higher densities, and have areas easier to serve.

Our opponents argue that if the prohibition is lifted, telephone companies will discriminate against their telephone customers. In our years of operation, to my knowledge, no one has ever made that claim against my company. In any event, there are sufficient Federal and state regulatory safeguards that protect telephone customers from such conduct.

It is time to open up cable television services to telephone competition, and I support legislation that would do this. In fact, one of the goals of the 1984 Cable Act was to foster competition in the cable television marketplace. Instead of moving to realize that goal, several bills pending in the House and

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[1] Since most rural cable operations have 12 or fewer channels, "must carry" requirements of 3 or 4 local broadcast stations plus one or more public access channels could significantly reduce the cable operator's available channel capacity. The effect of such a requirement could reduce service quality, result in higher prices to consumers, and threaten the cable operator's ability to survive -- if not discourage network construction initiatives altogether.

Senate plan to re-regulate cable television services. Re-regulation of our cable system would not help our rural customers. In fact, it would undoubtedly add to the cost of providing that service.

If re-regulation of all cable systems is found to be necessary, OPASTCO believes the oversight should be vested in the local regulators using the following provisions:

> 1) No regulation of rates if rates are increased at a cumulative equal to five percent or less over inflation per annum.
>
> 2) If 10 percent of the cable subscribers submit a formal complaint to the appropriate franchise authority, then that body can choose to regulate Tier I service for a specific amount of time.

OPASTCO encourages Congress to **lift the cross-ownership restriction with provisions that ensure the survival of small rural cable operators.**

Conclusion

Telecommunications development is a competitive concern to rural areas in that it can strengthen and revitalize business activity. Advanced telecommunications, such as broadband video, should not be limited to large cities, but should also play a major role in the development of rural America. Allowing rural telephone companies to carry entertainment television, for example, could spawn additional services to rural customers otherwise not available.

In addition, some large cable companies are avoiding rural areas with populations greater than the rural exemption since they consider these regions less profitable than other regions. Therefore, eliminating the cross-ownership ban is in the public interest since it extends broadband cable services to more of rural America. Small telephone systems would more easily expand the availability of information services if allowed to provide cable television in their telephone service areas.

Subjecting small cable systems to regulation designed for large urban-based systems would adversely affect service in rural areas. OPASTCO believes that addressing the above concerns and considering the special case of small telco/cable systems will advance the goals of providing the best quality and broadest range of cable services to the greatest number of people. The lives of rural citizens will benefit generally as information access removes some of the isolation of remote communities. Thus, **OPASTCO supports *conditionally* lifting the telco/cable cross-ownership ban with provisions for the small cable operator.**

Mr. Wise. Thank you, Mr. Lein.

Next will be Gene South, Executive Vice President of the Panhandle Telephone Cooperative, Inc., and he's also representing the U.S. Telephone Association.

Mr. South.

STATEMENT OF GENE SOUTH, EXECUTIVE VICE PRESIDENT, PANHANDLE TELEPHONE COOPERATIVE, INC., REPRESENTING U.S. TELEPHONE ASSOCIATION

Mr. South. Good morning. My name is Gene South. I am the executive vice president of operations for Panhandle Telephone Cooperative [PTCI] in Guymon, OK.

I appear before this committee on behalf of Panhandle and the U.S. Telephone Association, USTA, which represents about 1,100 member companies that provide telecommunications services over 98 percent of the access lines in the United States.

The purpose of my comments today is twofold: First, I want to share with you a real life, technological success story. Second, I want to point out the importance of pursuing the development and deployment of telecommunications technology for the betterment of all Americans.

Panhandle Telephone Cooperative supplies telephone and telecommunications services in the Panhandle of Oklahoma and serves approximately 4,200 subscribers.

In our service area, as in most rural areas of the country, the distressed state of our farm and energy economies has led to unwanted but necessary cutbacks in many public and social programs, including education.

Panhandle Telephone Cooperative did not want to see the schools close. Local school systems are critical to the economy and social stability of a regional rural area.

Our cooperative, therefore, joined with the administrators in Beaver County to develop an educational delivery system for the sharing of curriculum and classes between schools.

We determined that the best way to share Beaver County's educational resources would be through the use of a private interactive television network.

Now in its second year of operation, Panhandle Shared Educational Video Network, PSVN, a joint school/business partnership with a panhandle subsidiary, is furnishing the means through which four Beaver County high schools provide high quality instruction and education to their students over 83 miles of fiber optic cable.

The PSVN system is a leading edge educational tool using state-of-the-art telecommunications technology that provides bidirectional, fully digital video signals with the use of fiber optics.

The system allows the teacher in one school to teach a class which can be viewed by students in any one, or in all, of the other schools connected to the network.

The teacher can see and communicate with the students in the distant classrooms which in turn can also see and communicate with each other.

Eventually this system will tie together school systems throughout the Panhandle of Oklahoma, including Panhandle State University.

The interactive educational system I just described would not have been possible were it not for the digital fiber optic network built by Panhandle Telephone Cooperative.

This digital network provides top quality telephone service to all of our customers and will serve as the backbone of the PSVN system as it expands.

This is our success story.

Through the use of digital and fiber optic technology, coupled with network management expertise provided by the local telephone company, we were able to improve the educational opportunities for our young people and realize a better utilization of our resources.

What else can we do with this technology?

In my view the natural evolution of PSVN would be to take these services into the home. And this is the other reason why I'm speaking with you today.

All telephone companies should be allowed to pursue the use of the latest technology to benefit their customers. If telephone companies are permitted to offer video services to the home, there will be more revenues available to support the deployment of fiber. Otherwise fiber costs will have to be shared only by voice and data services. Fiber deployment will be delayed and this country's telecommunications infrastructure will suffer.

If large telephone companies are able to enter the video services market, they will be able to bring their greater research and development capabilities to bear as well as attract other manufacturers and service providers. And this will benefit rural Americans through more diverse offerings and lower prices.

The public interest is not being served by precluding telephone companies from being partners in the provisioning of worthwhile services.

We believe a competitive marketplace would serve the public interest and benefit consumers.

Through a fiber optic network, telephone companies would be able to offer shopping and banking at home, interactive television, sports, entertainment, video on demand, and community services such as education.

Provisioning of video is just one part of a much larger effort.

The cable law serves as a barrier to the telephone industry as it seeks to build a network of the future.

I thank you for this opportunity to appear before you and I am prepared to respond to your questions.

[The prepared statement of Mr. South follows:]

TESTIMONY

OF

GENE R. SOUTH, SR.

EXECUTIVE VICE PRESIDENT - OPERATIONS

PANHANDLE TELEPHONE COOPERATIVE, INC.

ON BEHALF OF THE

UNITED STATES TELEPHONE ASSOCIATION

BEFORE THE

SUBCOMMITTEE ON INFORMATION, JUSTICE
AND AGRICULTURE

OF THE

HOUSE GOVERNMENT OPERATIONS COMMITTEE

FEBRUARY 7, 1990

WASHINGTON, D.C.

Good morning. My name is Gene South. I am Executive Vice President of Operations for the Panhandle Telephone Cooperative in Guymon, Oklahoma. I appear before this committee on behalf of Panhandle and the United States Telephone Association (USTA).

USTA represents about 1100 member companies that provide telecommunications services to over 98 percent of the access lines in the United States. USTA members range from large publicly-held corporations to family-owned companies and customer-owned cooperatives such as Panhandle. For nearly a century, USTA member telephone companies have been dedicated to fulfilling two goals: serving the nation's telecommunications needs and maintaining universal service.

The purpose of my comments today is twofold. First, I want to share with you a real life, technological success story. Secondly, I want to point out the importance of pursuing the development and deployment of telecommunications technology for the betterment of all Americans.

In the way of background, as the name of my company suggests, the Panhandle Telephone Cooperative supplies telephone and telecommunications services in the panhandle of Oklahoma. Organized between 1956 and 1958, with 600 subscribers, today the Cooperative serves approximately 4,200 subscribers.

While we may have had positive growth over the years, I would not characterize our present or future business environments as economically sound. In our service areas, as in most rural areas of the country, the distressed state of our farm and energy economies has resulted in a substantial decrease in tax dollars. This shortfall has lead to unwanted but necessary cutbacks in many public and social programs. Unfortunately, this includes education.

It is no secret that the educational system in the state of Oklahoma is facing some very difficult times and some tough choices.

Due to the remoteness of some of our schools, the lack of teachers, and declining revenue, the Oklahoma State Department of Education -- as well as the school districts located in the panhandle -- realized it would only be a matter of time before some of these schools would have to be closed.

The Panhandle Telephone Cooperative did not want to see that happen. We could not afford to let schools close or be consolidated into larger school systems outside the local communities. Local school systems are normally the center of the community so it is critical to the economic and social stability of the region that they maintain their vitality and educational progressiveness. If they did not, then the communities around them would eventually die out.

One of our primary goals at Panhandle Telephone is to provide any assistance that will enable communities in our service area to not only survive, but to grow and prosper -- now and in the future.

It is for these reasons that our cooperative joined with the administrators and boards of education of the four high school districts in Beaver County to develop an alternate educational delivery system that would allow for the sharing of curriculum and classes between schools.

In other words, we needed to find a way to pool the educational resources we had available to keep our schools open.

The increasing emphasis from the Oklahoma State Department of Education for increased educational opportunities and standards led to an innovative approach to deal with this problem. it was determined that the best way to share Beaver County's educational resources would be through the use of a private, interactive television network.

As school commenced in August of this year, this network began its second year of operation. The Panhandle Shar-Ed

Educational Video Network (P-S-V-N), a joint school/business partnership with Panhandle Telecommunication Systems, Inc., a subsidiary of our telephone cooperative, is furnishing the means through which four Beaver County schools provide high quality instruction and education to their students.

The Beaver County System ties together the schools of Balko, Turpin, Forgan and Beaver over 83 miles of fiber optic cable. Transmitting and receiving equipment is located at each individual site and each school is equipped with a studio classroom for broadcasting and receiving classes. The PSVN system is a leading edge educational tool, using state of the art telecommunications technology, that provides bi-directional, fully digital video signals via fiber optics.

The system allows a teacher in one school to teach a class which can be viewed by students in any one, or in all, of the other schools connected to the network. With full duplex interactive video, the teacher can also see and communicate with the students in distant classrooms. These distant classrooms can also see and communicate with each other.

The PSVN system is one of the first fully digital video networks in existence. Eventually this system will tie together school systems throughout the panhandle of Oklahoma, including Panhandle State University. We envision PSU becoming a "regional university", that will serve the educational needs of students in Northwest Oklahoma, Texas, New Mexico, Colorado and Kansas.

The interactive educational system I've just described would not have been possible were it not for the digital network built by Panhandle Telephone Cooperative.

This network, which includes electronic switching centers connected by fiber optic transmission facilities, provides top quality telephone service to all of our customers. This same digital network will serve as the backbone of the PSVN system as it expands.

And it will expand. The PSVN system has surpassed all of our initial goals. It is now apparent to everyone involved that we have only scratched the surface capabilities this system offers. I have no doubt that in the future we will see innovative applications we haven't even thought of yet. We know it will exist for the students in our schools and for the people in our communities.

This is our success story. Through the use of digital and fiber optic technology, coupled with the network management expertise provided by the local telephone company, we were able to improve the educational opportunities for our young people, and realize a better utilization of our resources.

We have been able to preserve the vitality of our corner of rural America. And we have done so through the development and deployment of state of the art telecommunications technology. But this success story begs the question: "What else can we do with this technology?" In my view, quite a lot.

Applications like the Panhandle Shar-Ed Educational Video Network are no longer the blue sky dreams of engineers and planners -- they are reality. Sound business management and the advancement of the public interest dictate that we must pursue similar and even more innovative applications throughout the country. As Americans, we must work together to position ourselves to reap the benefits of the Information Age.

In Oklahoma's panhandle, the PSVN system is not only meeting an immediate need, it has also led to the improvement of the telecommunications infrastructure for all of the Panhandle Telephone Cooperatives' customers. The natural evolution of some of the services offered over the PSVN would be to take them into the home -- for the disabled, for shut-ins or for those who otherwise can't make it to one of the school sites.

Panhandle is lucky. Because the communities we serve have populations of 2,500 or less, we do not need a special waiver to provide video services. Current regulatory barriers either prohibit or greatly restrict this possibility for telephone companies in communities with populations over 2,500. And this is the other reason why I am speaking with you today.

All telephone companies should be allowed to pursue the use of the latest telecommunications technology to benefit their customers. If telephone companies are permitted to offer video services to the home, there will be more revenues available to support the deployment of fiber.

Otherwise fiber costs will have to be shared only by voice and data services. Fiber deployment will be delayed, and this country's telecommunications infrastructure will suffer.

Current FCC regulations and the prohibitions contained in the Cable Act prevent local telephone companies in communities with populations over 2,500 from entering the video programming marketplace. They provide no incentive to accelerate the development and deployment of advanced technology. In a word, they are counterproductive. The more services we can provide over an advanced public switched network, the larger the customer base will be to pay for this network.

If the large telephone companies are able to enter the video services market, they will be able to bring their greater research and development capability to bear as well as attracting other manufacturers, and service providers. This will benefit rural Americans through more diverse offerings and lower prices.

At Panhandle, through our partnership, we could actively participate in getting the shared educational video network up and running over our digital network. We were able to save thousands of dollars in development and installation costs, and we are quite proud of the system's success. We want to have that same type of "partnership" for our residential customers.

I cannot see how the public interest is being served by precluding any telephone company from being a partner in the provision of worthwhile services. I doubt that many of the 4,200 residential customers we serve can see the benefit either.

In the on-going debate over cable television/telephone company cross-ownership, the cable industry has erected many straw men, saying the telephone industry will come in and make a killing in the entertainment television marketplace and run the local cable operators out of business. This is simply not true. Local telephone companies want the opportunity to compete with cable operators in offering cable television. We believe a competitive marketplace would serve the public interest and benefit consumers.

Yes, the local telephone industry wants to be able to provide their customers with cable TV, but it is not the only objective. Our concerns are broader than who should be allowed to offer entertainment television to the American public. What we are really talking about is the future course of telecommunications in this country.

The provision of cable television by telephone companies can provide one necessary impetus to accelerate the deployment of fiber optic technology into the public switched network. Through a fiber optic network, telephone companies would be able to offer shopping and banking at home, interactive television, sports, entertainment, video-on-demand, community services such as education and self help courses and much more. Allowing telephone companies to provide cable television is just one part of a much larger effort.

The federal cable law that is keeping local telephone companies out of the cable industry is the same law that serves as a barrier to the telephone industry as it seeks to build the networks of the future.

The people in Beaver County, Oklahoma may live in a rural area, but they are on the leading edge of the new era of telecommunications. They have tapped into its tremendous potential.

What we need to realize is that we are no longer heading into the Information Age - we have arrived.

I thank you for this opportunity to appear before you, and I am prepared to respond to your questions.

Mr. **Wise**. I thank you for your testimony.

Mr. Lein, your coop has expanded into cable and I take it you are providing cable service under the rural exemption. Is that correct?

Mr. **Lein**. We are providing it under two crossownership waivers.

Mr. **Wise**. Then are you providing cable service outside of your local service area?

Mr. **Lein**. We do not. Those two communities in which we serve the thousand customers are within our service territory.

Mr. **Wise**. Have either of your systems, yours, Mr. Lein or yours, Mr. South, borrowed money from REA or the Rural Telephone Bank?

Mr. **Lein**. Winnebago has.

Mr. **South**. We have approached REA for a loan request and I've received notification that the loan had been approved for educational cable, not for cable TV purposes.

Mr. **Wise**. Are there particular obstacles an REA telephone buyer must face if they want to offer cable TV?

Mr. **Lein**. Well, let me make clear when I say Winnebago received an REA/RTB loan. It was for telecommunication/telephone facilities, not for cable.

Mr. **Wise**. And yours is for education?

Mr. **South**. I would see some difficulties because REA will only allow you to provide those type of services, educational TV, within your certified territory. They prohibit services outside your certified territory.

Mr. **Wise**. Would both of you recommend raising the present 2,500-person standard that permits you to offer cable service?

Mr. **Lein**. Yes. I think at a minimum it should be raised to, say, a 10,000 figure.

Mr. **Wise**. Mr. South.

Mr. **South**. And I have no problem with that. I've heard figures from the 2,500 up to 20,000. I think the issue is that when the larger telephone companies are allowed into providing CATV, we will receive the benefits in rural America by those benefits of R&D and therefore lower prices.

Mr. **Wise**. Let me ask some questions that were raised by the statements of the previous panel, one of those being that there should not be, in the words of the previous panel, forced feeding of fiber optics because it's something that telephone companies will do anyhow, although over a longer period of time and that, indeed, a rate payer should not be asked in effect to subsidize cable.

Could you comment, react to that, either one of you or both? Mr. Lein.

Mr. **Lein**. You know, I've got 21 miles of fiber in the ground today, trunk cable that's been in the ground for 3 years and working well. I haven't raised rates because of that.

I think that if we're going to get fiber to the home and provide these services that rural America needs, we can speed it up by putting the two together; by putting cable television broadband services and telephone together.

I think it was a dreadful mistake in the 1970's to split those two industries which I think are one and are proving to be one today.

Mr. **Wise**. Mr. South.

Mr. **South**. Mr. Chairman, we serve 4,807 square miles in the Panhandle of Oklahoma with 4,200 subscribers. Our density factor is 1.6 customer per route mile of cable. We have deployed 231 miles of fiber optics. Through that we've linked our central offices and provided educational services to the schools and we have not raised our rates 1 penny.

Mr. **Wise**. Let me ask you, Mr. South: You're providing, as I understand it, educational services via fiber optic but you're not actually involved in the cable business itself, are you?

Mr. **South**. That is correct.

Mr. **Wise**. Why have you chosen not to do that?

Mr. **South**. Basically we have 14 communities. Five of those fourteen are receiving CATV services by other entities than the local telephone company. Nine of the fourteen exchanges is actually rural, rural. And I'd like to define that. We do not have——

Mr. **Wise**. I take it anything outside of Clendenin I would define as rural, but go ahead.

Mr. **South**. For instance, to give you an example, one of our communities is Eva and we do not have a nucleus of customers in one small area. For that central office we have subscriber loops that are 27 and 30 miles long. So it is cost prohibitive to provide CATV as a stand-alone service and erect those type of facilities to those long loops of 27, 30 miles long.

Mr. **Wise**. What would be your feelings, either one of you, if there were limited changes made in the Cable Act so as to permit you to involve in being the conduit for cable television but to prohibit telephone companies from being involved with programming? Any of you care to comment on that?

Mr. **Lein**. We at Winnebago consider ourselves really too small for programming with a thousand customers. I know what studios cost and those other activities. I don't think I or OPASTCO has a problem with the conduit idea as long as the telco would be permitted to provide some programming on that same conduit.

Mr. **South**. And I would agree with that. Basically I think as my Congressman stated earlier we are not looking just at the aspect of CATV services; we're looking at a much larger picture of providing many services over broadband facilities.

Mr. **Wise**. Finally, in the previous panel there was some discussion of the adequacy of satellite service for educational purposes versus fiber optic. Would you have any observations you would like to make on that, and how interactive each one is? Mr. Lein. Mr. South.

Mr. **Lein**. I'm not an engineer but I do believe they're not very interactive and would not be a successful media today.

You might be interested in an effort to get television signals to some of my rural customers, I have 2 years ago joined the RNTC who provides programming through satellite dishes.

I think today Winnebago has 50 rural customers enjoying those satellite programs they really can't get any other way.

Mr. **South**. To me there is quite a bit of difference between that of satellite and bidirectional use of fiber optics. For instance, the educational purposes that we're using fiber today in linking the schools, fiber optic is so sensitive that when a student turns a page in a remote school, the teacher can hear that page turned.

Where if you use satellite today with it being nondirectional, you have the video through the satellite but your audio is through your land lines of the telephone systems and there is the inadequacy of true interactive television.

So to me in using the pure broadband facilities is the way to provide the best services to those rural Americans.

Mr. **Wise**. That also means, then, that 30 years ago the teacher could have seen me talking to the kid behind me, too.

Mr. **South**. That's correct.

Mr. **Wise**. Technology may have gone too far.

Mr. McCandless.

Mr. **McCandless**. Thank you. I'd like to see some of that technology between our district offices. [Laughter.]

The pins we hear drop are sheet metal bombs coming out of the cable. I've been waiting to listen to that fiber optic.

My problems are somewhat different than those of my colleagues. On every ballot issue in my district there's something that says "please, don't send any more people to us. We don't want any more." So when we talk about rural areas, as you gentlemen have, and the sparsely populated demand for the services that you provide are somewhat different.

My interest, of course, is in that, but particularly my interest is in the regulatory process and what if anything we need to do in order to improve that without placing the governmental organizational structure in a mode of hampering what I consider to be the necessary private enterprise flexibility.

A lot of words.

You gentlemen in your experience in Iowa and Oklahoma with the current 1984 law deregulation, if you had your "druthers," what would you like to see changed and at what level would you like to see the regulatory process, if any, on cable TV?

Mr. **Lein**. For my part, sir, I don't see a lot of benefits in Iowa to cable regulation.

My two cable systems have never been rate regulated. The communities, although they've had opportunity to, chose not to regulate the rates of those two cable systems.

The States of Minnesota and Iowa years ago stopped regulating the rates of telephone companies under 15,000 access lines. In Iowa that leaves, of 155 telephone companies, only five rate-regulated companies, the holding companies. The rest of us are not rate regulated.

I think that the health and prosperity of the telephone companies and the service and the very reasonable rates to the customers will bear out that not regulating those rates has been a good move for that industry.

Mr. **South**. In the competitive environment I do not see the need for regulation. But if regulation is necessary I feel that there should be special recognition to those rural areas. There's where we get to the point of the definition of what is rural. And I have no problems with the 2,500 being moved up to a threshold of 10,000 or 20,000.

But I definitely believe that—I'm a strong advocate for rural. Those services that are provided in the urban areas should be provided in rural areas. PTCI consumers are entitled to those services.

Mr. McCandless. It's nice and quiet in the rural area. Should the urban area be provided with the same environment?

Mr. South. To respond to that, Congressman, I would say that we're trying to meet the dramatic food demands in our agricultural environment. And, yes, we have some peace and quietness that we're quite proud of. But within that scenario we also are proud of providing the best telecommunications infrastructure network and services over those telecommunications infrastructures.

We have good quality telephone service. We would not expect less.

And what I am saying is to a continued effort of economic growth in the rural areas those services that will be provided in the urban areas need also to be provided in the rural areas.

Mr. McCandless. You two gentlemen have very clearly stated your position.

Mr. Lein, you talked about the nonregulatory process of the telephone companies which would also reflect the cable companies within the general area of your habitat. As a telephone company, occasionally or frequently are you accused of rates being increased unjustifiably? Are there cable companies in your area similar to those that have been expressed here today of raising rates too rapidly? What is the general atmosphere of that kind of process in your area?

Mr. Lein. The telephone companies in Iowa and Minnesota are rarely accused—the small companies are rarely accused of excessive rates.

I suppose the MSO cable television companies have rates in the $16.50 area which is roughly the national average. And I do know they get complaints about increases, especially in the last 2, 2½ years.

Mr. McCandless. Do you think that increase is proportionate to quality of service—I mean, the complaints?

Mr. Lein. I can't respond to the quality of service very well. I think that it isn't the signals. They're generally getting good signals. It's probably the response to outages and troubles, that they're not very responsive, and there are a lot of complaints about that. They send the serviceman to the town twice a week. That's not enough.

In my system I can have a person whose telephone and television is out and he or she will ask to have the television fixed much sooner than he will a telephone.

If there's a bill problem in making a payment, they'll make the television bill payment before they will a telephone. It's that important to them.

Mr. McCandless. Mr. South.

Mr. South. In Oklahoma I have not heard any comments to the point that our rates are too high or that they are increasing.

As to the second part of your question, there was a study made. In the State of Oklahoma the average rates for cable TV for the base year of 1986 I believe was $11.64. Compare that to the base year of 1989, it's $16.39. So there's a 39 percent increase just for the State of Oklahoma.

Mr. McCandless. Thank you, gentleman. Thank you, Mr. Chairman.

Mr. **Wise**. The gentleman from Oklahoma, Mr. English.

Mr. **English**. Thank you, Mr. Wise. I do want to respond to my good friend and colleague from California and say that noise is usually connected to jobs. So if you have any noise-connected jobs, you might send them to Oklahoma from California. We would be delighted to take those jobs and take a little noise off his hands any time.

Let me ask you with regard to the areas that you serve, both of you, Mr. Lein and Mr. South, is it correct that of all the rural communities that you have, within the next 10 years how many of those communities given the way things are now, how many communities do you think will be served by fiber optics as opposed to what we have today?

Mr. **South**. Within the next 10 years?

Mr. **English**. Yes. Give me a percentage. You don't have to give me communities. But roughly a percentage of the communities that you have.

Mr. **South**. That is fiber direct to the home I guess is what you're asking?

Mr. **English**. Right.

Mr. **South**. Congressman, I would say that within the next 10 years that if we are allowed as the total telephone industry into cable——

Mr. **English**. Just as they are right now.

Mr. **South**. Just as they are now?

Mr. **English**. Everything stays just exactly as it is now.

Mr. **South**. That's hard to decide but I would say 40 to 50 percent.

Mr. **English**. Forty to fifty percent? The 50 to 60 percent that remain, beyond the year 2000 is there any chance or much chance in the next 10 years that they would receive fiber optics?

Mr. **South**. I would say "yes." The deployment of fiber to the home based on a scale that you have just given me, under today's environment those, say 50 percent that did not receive fiber to the home, within that 10 years—I see the problem of the remaining 50 percent as a cooperative. PTCI needs to provide service to all members alike. And for me to provide fiber to home in one exchange and not provide it in another exchange under a cooperative atmosphere is not just to PTCI members as a total company. So PTCI needs to look at it as to the point of when it can really deploy fiber to the home hopefully within the next 10 years.

Mr. **English**. Can you deploy fiber optics to a community without deployment to the home, cost wise?

Mr. **South**. With today's technology there is some cable feeder routes which is the bulk feeder cable that can be provided through fiber optics and from there cable to the homes. As those costs are reduced and new technology comes upon us, I think the best way is direct fiber to the home.

Mr. **English**. We've got all these communities out there. This 50 to 60 percent that you're talking about that you don't think have a chance of putting fiber optics in the home in the next 10 years. I assume the reason you can't go beyond those is cost. Is that correct?

Mr. **South**. That's correct.

Mr. **English**. Can you make fiber optics available to a school or to a hospital without making it available to the rest of the community from a cost standpoint?

Mr. **South**. That we can. And basically what you have to look at, for instance, if you were to link the medical facilities, the hospitals in the Panhandle of Oklahoma with the backbone structure that we have today that links our central offices, we can take small spurs off that backbone and link these type of services together. Hospitals, banks, medical centers, elderly homes. And you would not have to deploy fiber to all the customers homes to provide those types of services.

Mr. **English**. Mr. Lein, what about in your part of the country? What percentage of the communities in the next 10 years do you think will be hooked up on fiber?

Mr. **Lein**. I agree with Mr. South's comments except I would think that in our area the percentage in the next 10 years to whom we could get fiber to the home would be probably less, 30, 40 percent.

Mr. **English**. Do the remainder have much of a chance of getting fiber in the next 10 years?

Mr. **Lein**. One of the problems with responding to the question is, we don't really know what research and development is going to turn up in the next year or two or three. But I think unless there is really great economic breakthroughs, I think there's little chance.

Mr. **English**. One of the concerns I have is that overriding question of all the rural communities. It seems to me that in this field of technology and the communications systems that for a lot of communities that's going to determine who's going to live and who's going to die. And the real question is, I suppose, how far we go in trying to give as many communities as possible a chance to survive.

I think we have a question with regard to the REA and the funding that's going to be provided through the RTB to companies and how far we move in that direction and how many communities we give a chance.

I think that this whole question of whether or not we do allow telephone companies to get into the cable business is another issue. There are some communities that it may spell the difference between being able to offer service and not being able to offer service.

What percentage of Winnebago's and the Panhandle's area of that 50 to 60 percent that's not likely to get it in the next 10 years, how many of those would it make a difference as far as the feasibility of being able to offer it, being able to provide television service and not being able to provide television service?

Mr. **South**. Again, I think that's an assumption that's hard to grab a hold of mainly because with the current prices and the current technology available that restriction is there. And I feel——

Mr. **English**. I'm talking about if the restriction was removed, of the communities within that 50 to 60 percent that you would be able to offer fiber to simply because of the fact that you've got other revenue coming in that you cannot offer today?

Mr. SOUTH. What we are seeing, Congressman, is, for instance, the cost of fiber decreasing about 50 percent approximately every 2 or 3 years.

To answer your question directly I would say half of those customers, half of that time.

Mr. ENGLISH. Mr. Lein, do you have any thoughts on that?

Mr. LEIN. I'd like to respond to the business aspect of the question. Lake Mills, my headquarters town, is a town of 2,300. We have almost now a thousand industrial jobs. We have been able to attract three new businesses in the last 3 years. The last one was a trucking firm, Norseman Trucking. It came in with 35 trucks and 55 or 60 men and women and clerks.

The communications system to them was of vital importance. We happen to be fortunate enough to have our fiber trunk facility into my headquarters town where we have a toll switch.

They wanted to install a satellite truck tracking system which I haven't seen yet but I understand they have it in and working. When the individuals came in to sell this satellite tracking program, they came in with the idea that this thing isn't going to work here. They were extremely surprised with our fiber facility that the levels and the tests that they made were of the highest quality and they had no problem at all installing the system.

This was a key issue to this man as he moved his business to our headquarters town.

Mr. ENGLISH. Would it make a difference in rural communities whether you were able to offer cable service or not able to offer cable service as to whether or not you can provide fiber optics to the community?

Mr. LEIN. It would except I have some communities that have already in the last 10 and 15 years lost the school, lost the bank, and lost the grocery store. They can't be helped.

Mr. ENGLISH. I would agree. I think we've got a lot of communities that do fall in that category. The question is how many more in the next 10 years we'll see that fate fall to.

Thank you, Mr. Chairman.

Mr. WISE. Thank you.

A followup question. If crossownership restraints were lifted—and we have been talking about the fact that the first economic incentive is to go to urban areas—what's to say that the telephone companies won't be concentrating on densely populated or higher income areas and leaving the rural areas behind? Would any of you care to comment on that?

Mr. SOUTH. I would say that traditionally the telephone industry has provided high-quality service and provided universal telephone service and is being allowed to provide CATV, with the appropriate FCC waivers. And basically I think your question is, would there be "skimming of the cream?"

There's no guarantees. You realize that. But I would say this in our certified areas of the telephone industry we are interested in providing that quality telephone service but other services. When we get outside of our certified territory, you just become that service provider, whether it be an information service provider or CATV service provider.

So within and outside our certified area we are very conscientious of providing the best service possible.

Mr. **Wise**. Mr. Lein, any thoughts?

Mr. **Lein**. Mr. South earlier made a point about making the best attempt to serve everyone with the same quality and type of service within his community. And that's admirable.

We try to do the same thing. But I must be honest with you, Winnebago serves 17 communities and I was only able in those communities that were left, depending on the size, we were only able to provide cable TV in two communities, leaving eight or nine others still unserved. I couldn't afford to serve them.

I'm going to have to go where I can economically do the job.

Mr. **Wise**. Thank you very much.

Mr. McCandless.

Mr. **McCandless**. I have nothing else.

Mr. **Wise**. Thank you and I thank the panel for your contribution.

The next witness will be William J. Bresnan, president of Bresnan Communications Co. and representing the National Cable Television Association.

As Mr. Bresnan comes forward, I would like to note that we had asked a small rural cable company from West Virginia and I think it probably reflects sometimes the condition under which rural companies must operate because the manager's wife became ill and one of the two employees I believe is sick and, therefore, he had to be out on the road visiting some homes. So unfortunately he was not able to be here. Perhaps we can get him at a later time.

Mr. Bresnan, if you have no objections to being sworn, if you would stand and raise your right hand.

[Witness sworn.]

Mr. **Wise**. You may begin. Your written statement will be made part of the record and please summarize in any way you feel.

STATEMENT OF WILLIAM J. BRESNAN, PRESIDENT, BRESNAN COMMUNICATIONS CO., REPRESENTING THE NATIONAL CABLE TELEVISION ASSOCIATION

Mr. **Bresnan**. Thank you, Mr. Chairman.

Mr. Chairman, members of the subcommittee, my name is William J. Bresnan. I'm president of Bresnan Communications Co. I'm also a member of the board of directors of the National Cable Television Association here in Washington. And I appreciate the opportunity to appear before the subcommittee today to discuss the efforts of the cable television industry to bring its programming to rural Americans.

Cable has been at the forefront of bringing television to rural areas and I'm proud of the accomplishments of our industry.

Mr. Chairman, cable television started as a rural technology in mountainous areas of West Virginia and Pennsylvania.

Cable extended the reach of broadcast signals far beyond that put out by the television transmitters and brought big city television stations to rural families who could not get them with their own television antennas.

Since those shoestring entrepreneurial days, cable, of course, has developed a broad diversity of its own programming and has moved into more populated areas to compete directly with television broadcasters. Yet we in cable have never abandoned our rural roots, nor have we forsaken our original mission, to bring television to the people in the country who live where broadcasters fear to go.

Your own State of West Virginia is a perfect illustration of this point. Whether you live in Bergoo, Flatwoods, Alum Bridge, or Twelve Pole, you can subscribe to cable television from a local cable operator.

Now, that's something that people who live in Georgetown or on Capitol Hill cannot do yet.

There are only 11 commercial television stations licensed to broadcast in West Virginia; there are 833 communities served by cable television in West Virginia.

When I entered the cable television business in 1958, the economics of our distribution technology allowed us to build out into the country if we could serve about 60 homes per route mile.

The money that our industry has poured into research and development, largely as a result of deregulation in the Cable Act of 1984, has improved our efficiencies to the point where we can now build out into the country, and aggressively are building out into the country, to an average of 10 homes per route mile. In fact, our company has a number of construction projects under way that go to as few as five homes per route mile.

For those who live in rural areas beyond even the reach of cable systems, there still is no need to go without ESPN, CNN, C-SPAN, or other popular cable networks.

Part of the complex compromise that made up the Cable Communications Act of 1984 was an agreement to legalize the use of satellite television receive-only antennas for the private home viewing of cable networks.

Home box office, the viacom networks such as showtime or nickelodeon, and other cable programmers have moved with determination to provide their programming directly to rural customers with backyard dishes.

This programming is available directly from cable networks, from a number of other distributors, in various combinations, and at prices comparable to—often lower than—prices paid by cable customers for the same programming.

In 1988 the cable industry played an integral role in the enactment of the Home Satellite Viewer Act which assured that home satellite dish owners would have access to the broadcast programming of independent television stations and to broadcast network programming where it cannot be received from local stations.

Satellite dish owners have the opportunity to purchase more different cable networks than do the vast majority of cable subscribers.

Further, there are still more than 70 channels of programming transmitted by satellite that are not scrambled, such as C-SPAN and C-SPAN II, and satellite dish owners may enjoy these networks at no charge.

The access to this broad array of television programming by satellite dishes is a major selling point for this technology. Dish sales are booming again, programming subscriptions are booming, and C-band direct broadcast satellite business is solid and healthy.

In the Upper Peninsula of Michigan, where my company has cable systems, satellite dishes are so ubiquitous that some wags refer to them as the "state flower." The same is true in most other rural areas of the Nation. In fact in my company which serves about 135,000 basic cable customers, we serve about 2,250 satellite dish customers in the program.

Mr. WISE. I just might note for the record, Mr. Bresnan, you come up our road and it looks like a massive tracking station up there.

Mr. BRESNAN. I know what you mean.

Mr. Chairman, all of this should go to demonstrate that rural Americans have been, and continue to be, full participants and beneficiaries in the dramatic growth of video programming we have witnessed through the last decade. Indeed, new technology has often had its first application in rural areas. Service to rural Americans spawned the birth of cable and spawned the birth of home satellite dishes. As technology develops, it will continue to be applied to rural areas.

I know that representatives of some of the telephone companies have come before this subcommittee and argued that with certain self-serving changes in the law they could deploy fiber optic technology to American homes. This contention deserves a serious look after which I believe it should be dismissed out of hand.

Telephone companies have done a remarkable public relations job of developing a certain high-tech mystique around a rather simple delivery technology—fiber optics.

Please don't misunderstand me. Fiber optics is an exciting medium for delivery of video programming. In fact we use it extensively in the cable industry.

But this mystique conjured up by telephone companies has allowed them to confuse the central issue. It has allowed the telephone companies to portray the deployment of fiber to the home as an end rather than a means.

New technology, particularly that which serves a captive rate base protected by statute; that is, the monopoly provision of telephone service, should be deployed for only one of two reasons: either its deployment is necessary to bring new services to the market or its deployment is cost effective because the technology is cheaper than the one it replaces, thereby allowing for a reduction in prices to the consumers.

Deployment of fiber to the home does not qualify under either criterion.

Most Americans today have access to two forms of wire delivery to the home: A telephone line and a cable line. Between these two, consumers can get voice, video, and computer services offered, or even planned, for home use.

But telephone companies want to replace their existing copper lines with fiber optic lines to the home. According to Ray Smith, chairman and CEO of Bell Atlantic, the cost of rewiring the Nation's homes with fiber is around $400 billion. Now, that's more than twice the total asset value of the entire telephone industry today. And telephone rates are based on investment in assets.

Now, what new services do telephone companies propose to give customers in exchange for this hefty price tag? Absolutely none.

Despite all the lofty rhetoric floated by telephone companies about the threshold of the information age, there is not a single service for residential customers that could be provided over the fiber optic network of the future that cannot already be provided today using the copper plant of the telephone companies and the coaxial plant of the cable operators.

No new services whatsoever.

What, then, is all the debate about? It's simple. As you might expect, it's about money.

Telephone company rates and hence their cash flow are based on an authorized return over and above invested capital.

They have become ironic victims of their own technological and political success.

Improvements in technology have increased operating efficiencies and reduced costs. At the same time their lobbyists in Washington and State capitols have scored enormous tax breaks for telephone companies through accelerated depreciation.

Together these factors have reduced the expense component of the rate formula. That leaves the telephone companies in the rather embarrassing position of having to either find new costs for investment or cut local telephone rates.

They are under a tremendous financial pressure, therefore, to deploy fiber to the home and increase their investment costs which they will get back with an average 13 percent return in the form of telephone rates.

By ripping out all of their existing wires to the home and replacing them with fiber, they can continue to justify high telephone rates for consumers; but as I have pointed out, consumers will get no new services.

This financial pressure to buttress invested capital builds as the utility commissions in State after State move to rollback telephone rates.

Last year alone, according to the FCC, 22 States ordered rate reductions totaling more than $838 million.

In the last 2 years, utility commissions around the country have ordered rate reductions of more than $2 billion.

Telephone companies seem almost desperate to invest heavily in fiber to the home now before the cost of telephone service to their customers is lowered once again.

Mr. Chairman, according to the FCC, 12.7 percent of the families in West Virginia do not have telephones even though telephone lines pass nearly every home.

If these families could have phone service, but do not, the most likely reason is that they cannot afford it. This is understandable.

The average rate for local phone service in West Virginia in 1989 was $25.11. The USTA study, by the way, shows the average rate for cable in West Virginia is $15.82 in 1989. That's per month.

That rate gives West Virginia the unwelcome distinction of having the highest average local residential telephone rate in America.

Keeping rates artificially high through deployment of fiber to the home may be in the best interests of the telephone companies, their shareholders, and their bankers. It is not in the best interests of consumers.

It is primarily for this reason that the Consumer Federation of America, whom you heard from earlier, and the American Association of Retired Persons recently issued a report concluding that expedited deployment of fiber to the home is not in the public interest. The report also finds there is "no need to relax restrictions on local telephone companies' involvement in cable TV."

I also understand that some telephone companies claim that absent a change in the law, rural Americans will go without cable television.

Let me state unequivocally, Mr. Chairman, that the cable industry has no desire to see a regulatory structure that deprives anyone of cable television.

It is for that reason that the 1984 Cable Act created a statutory rural exemption from its crossownership policy which prohibits telephone companies from being cable television companies in the same market.

Today a telephone company wishing to serve an area with 2,500 homes or less or with 30 homes or less per route mile may obtain a franchise to do so. Prior to 1984, that telephone company would have needed permission from the FCC before it could provide service to these areas.

For markets that do not fall within the exemption, telephone companies may still provide cable service if they can demonstrate to the FCC that without their provision of cable programming it will not be provided or if they can demonstrate some other good cause.

Now, some telephone companies have complained of the regulatory burden of obtaining a waiver. A brief review shows this burden is minimal at most.

Since the Cable Act went into effect, no waiver request by a telephone company has been denied. Every single one has been granted. The average time for processing these applications is now down to 60 days.

I have attached to my statement a chart that provides greater detail.

Mr. Chairman, the waiver process at the FCC acts is no meaningful regulatory barrier to the provision of video programming by telephone companies in rural areas, consistent with the crossownership policies enacted by Congress in 1984.

In conclusion, Mr. Chairman, it has been my pleasure to appear before you to discuss these issues. My colleagues and I in the industry are the ones who first brought television to rural America more than 30 years ago. We are pioneering ways to improve the service we already provide. It was important to cable that rural America share in the diversity of programming now available in the industry and it remains important. And we intend to see that they continue to share in all that cable has to offer.

I respectfully request that my statement be made part of the record.

Mr. Chairman, I would be glad to respond to any questions.

[The prepared statement of Mr. Bresnan follows:]

STATEMENT

OF

WILLIAM J. BRESNAN

PRESIDENT

BRESNAN COMMUNICATIONS

BEFORE THE

SUBCOMMITTEE ON GOVERNMENT INFORMATION, JUSTICE, AND AGRICULTURE

COMMITTEE ON GOVERNMENT OPERATIONS

UNITED STATES HOUSE OF REPRESENTATIVES

FEBRUARY 7, 1990

Mr. Chairman, Members of the Subcommittee, my name is William J. Bresnan. I am President of Bresnan Communications. I am also a member of the Board of Directors of the National Cable Television Association.

I appreciate the opportunity to appear before the Subcommittee today to discuss the efforts of the cable television industry to bring its programming to rural Americans.

Cable has been in the forefront of bringing television to rural areas and I am proud of the accomplishments of our industry.

Mr. Chairman, cable television started as a rural technology in mountainous areas of West Virginia and Pennsylvania. Cable extended the reach of broadcast signals far beyond that put out by television transmitters and brought city TV stations to rural families who could not get them with their own television antennae. Since those shoe-string, entrepreneurial days, cable, of course, has developed a broad diversity of its own programming and has moved into more populated areas to compete directly with television broadcasters. Yet we in cable have never abandoned our rural roots, nor have we forsaken our original mission: to bring television to the people in the country who live where broadcasters fear to go.

Your own state of West Virginia is a perfect illustration of this point. Whether you live in Bergoo, Flatwoods, Alum Bridge, or Twelve Pole, you can subscribe to cable television from a local cable operator. That's something the people who live in Georgetown or on Capitol Hill cannot do. There are only 11 commercial television stations licensed to broadcast in West Virginia; there are 833 communities served by cable in West Virginia.

When I entered the cable television business in 1958, the economics of our distribution technology allowed us to build out into the country if we could serve about 60 homes per route mile. The money that our industry has poured into research and development, largely as a result of deregulation in the 1984 Cable Act, has improved our efficiencies to the point where we can now build out into the country — and aggressively are building out into the country — to an average of 10 homes per route mile. In fact, our company has a number of construction projects underway that will build out as far as five homes per route mile.

For those who live in rural areas beyond even the reach of cable systems, there still is no need to go without ESPN, CNN, C-SPAN, or other popular cable networks. Part of the complex compromise that made up the Cable Communications Policy of 1984 was an agreement to legalize the use of satellite television receive-only antennae for the private home viewing of cable networks. Home Box Office, the Viacom networks such as Showtime or Nickelodeon, and other cable programmers have moved with determination to provide their programming directly to rural customers with backyard dishes. This programming is available directly from cable networks, from a number of other distributors, in various combinations, and at prices comparable to —

often lower than — those prices paid by cable subscribers for the same programming.

In 1988, the cable industry played an integral role in the enactment of the Satellite Home Viewer Act, which assured that home satellite dish owners would have access to the broadcast programming of independent television stations and to broadcast network programming where it cannot be received from local stations.

Satellite dish owners have the opportunity to purchase more different cable networks than do the vast majority of cable subscribers. Further, there still are more than 70 channels of programming transmitted by satellite that are not scrambled, such as C-SPAN and C-SPAN II, and satellite dish owners may enjoy these networks at no charge.

The access to this broad array of television programming by satellite dishes is a major selling point for this technology. Dish sales are booming, programming subscriptions are booming, and the C-band direct broadcast satellite business is solid and healthy. In the Upper Peninsula of Michigan, where my company has cable systems, satellite dishes are so ubiquitous that some wags refer to them as the "state flower." The same is true in most other rural areas of the nation.

Mr. Chairman, all of this should go to demonstrate that rural Americans have been, and continue to be, full participants and beneficiaries in the dramatic growth of video programming we have witnessed through the last decade. Indeed, new technology has often had its first application in rural areas. Service to rural Americans spawned the birth of cable and spawned the birth of home satellite dishes. As television technology develops, it will continue to be applied to rural areas.

I know that representatives of some telephone companies have come before this Subcommittee and argued that, with certain self-serving changes in the law, they could deploy fiber optic technology to rural American homes. This contention deserves a serious look, after which, I believe, it may be dismissed out of hand.

Telephone companies have done a remarkable public relations job of developing a certain high-tech mystique around a rather simple delivery technology -- fiber optics. Now please do not misunderstand me. Fiber optics is an exciting medium for delivery of video programming. In fact, we in the cable industry use it extensively. But this mystique conjured by telephone companies has allowed them to confuse a central issue. It has allowed telephone companies to portray deployment of fiber to the home as an end rather than a means.

New technology, particularly that which serves a captive rate base protected by statute (i.e. the monopoly provision of voice telephone service) should be deployed for only one of two reasons -- either its deployment is necessary to bring new services to the market, or its deployment is cost effective because the technology is cheaper than the one it replaces, thereby allowing for a reduction in prices to consumers. Deployment of fiber to the home does not qualify under either criterion.

Most Americans today have access to two forms of wire delivery to the home: a telephone line and a cable line. Between these two, consumers can get every voice, video, and computer service offered, or even planned, for home use. But, telephone companies want to replace their existing copper lines with fiber optic lines to the home. According to Ray Smith, Chairman and CEO of Bell Atlantic, the cost of rewiring the nation's homes with fiber is around $400 billion. That is more than twice the the total asset value of the entire telephone industry today. And telephone rates are based on investment in assets. Now what new services do telephone companies propose to give consumers in exchange for this hefty pricetag? Absolutely none.

Despite all of the lofty rhetoric floated by telephone companies about the threshold of the "information age," there is not a single service for residential consumers that could be provided over the fiber optic network of the future that cannot already be provided today using the copper plant of the telephone companies and the coaxial plant of cable operators. No new services.

What, then, is all the debate about? It is simple. As you might expect, it is about money. Telephone company rates, their cash flow, are based on an authorized return over and above invested capital. They have become ironic victims of their own technological and political success. Improvements in technology have increased operating efficiencies and reduced cost. At the same time, their lobbyists in Washington and in state capitals have scored enormous tax breaks for telephone companies through accelerated depreciation. Together, these factors have reduced the expense component of the rate formula. That leaves the phone companies in the rather embarrassing position of having to either find new costs for investment or cut local telephone rates.

They are under enormous financial pressure, therefore, to deploy fiber to the home and increase their investment costs — which they get back, along with an average 13% return, in the form of phone rates. By ripping out all of their existing wires to the home, and replacing them with fiber, they can continue to justify high telephone rates for consumers; but, as I have pointed out, consumers will get no new services.

This financial pressure to buttress investment expense builds as the utility commissions in state after state to roll back telephone rates. Last year alone, according to the FCC, 22 states ordered rate reductions totaling more than $838 million. In the last two years, utility commissions around the country have ordered rate reductions of more than $2 billion. Telephone companies seem almost desperate to invest heavily in fiber to the home now, before the cost of telephone service to their customers is lowered again.

Mr. Chairman, according to the FCC, 12.7% of the families in West Virginia do not have telephones, even though telephone lines pass nearly every home. If these families could have phone service, but do not, the most likely reason is that they cannot afford it. That is understandable. The average rate for local phone service in West Virginia in 1989 was $25.11

per month. That rate gives West Virginia the unwelcome distinction of having the highest average local residential telephone rate in America.

Keeping rates artificially high through deployment of fiber to the home may be in the best interests of telephone companies, their shareholders and their bankers; it is not the best interests of consumers. It is primarily for this reason that the Consumer Federation of America and the American Association of Retired Persons recently issued a report concluding that expedited deployment of fiber to the home is not in the public interest. The report also finds there is "no need to relax restrictions on local telephone companies' involvement in cable TV."

I also understand that some telephone companies claim that absent a change in law, rural Americans will go with out cable television. Let me state unequivocally, Mr. Chairman, that the cable industry has no desire to see a regulatory structure that deprives anyone of cable television. It is for that reason that the 1984 Cable Act created a statutory rural exemption from its cross-ownership policy prohibiting telephone companies from being cable television companies in the same market. Today, a telephone company wishing to serve an area with 2500 or less people, or with 30 homes or less per route mile, may obtain a franchise and do so. Prior to 1984, that telephone company would have needed permission from the FCC before it could provide service to these areas.

For markets that do not fall within the exemption, telephone companies still may provide cable service if they can demonstrate to the FCC that without their provision of cable programming it will not be provided, or if they can demonstrate other good cause.

Now some telephone companies have complained of the regulatory burden of obtaining a waiver. A brief review shows this burden is minimal at most.

Since the FCC adopted cross-ownership rules in 1970 (which prohibit telephone companies from providing video services in their intra-exchange areas), 418 waiver requests have been filed. Over that 20 year course, five were denied. In other words, Mr. Chairman, for 20 years, the FCC has granted over 99% of the waiver requests it has received.

Since the Cable Act went into effect, no waiver request by a telephone company has been denied. Every one has been granted. The average time for processing these applications is now down to around 60 days. I have attached to my statement a chart that provides greater detail.

Clearly, Mr. Chairman, the waiver process at the FCC acts as no meaningful regulatory barrier to provision of video programming by telephone companies in rural areas, consistent with the cross-ownership policies enacted by Congress in 1984.

In conclusion, Mr. Chairman, it has been a pleasure to appear before you to discuss these issues. My colleagues and I in the cable industry were the ones who first brought television to rural America more than 30 years ago. We are pioneering ways to improve the service we already provide. It was important to cable that rural America share in the diversity of video programming now available in our country, and we intend to see they continue to share in all that cable has to offer.

I respectfully request that my statement be made part of the record. I would be glad to respond to any questions from the Subcommittee.

SUMMARY OF WAIVER AND CONSTRUCTION APPLICATIONS BY TELEPHONE COMPANIES TO PROVIDE CABLE SERVICE IN RURAL AREAS

Telephone companies serving rural areas currently are allowed to provide video programming service in their telephone service area. Telephone companies serving under-populated areas may obtain waivers of the cross-ownership ban if they are able to show that in a particular area, without telephone company involvement as a video programmer, video programming could not exist. The FCC in 1979 liberalized the availability of the waiver by creating a presumption that cable television service could not exist in areas where there were less than thirty homes per cable mile. The FCC also later created an exemption for rural areas (defined as population of less than 2,500), provided no other cable system was in existence or under construction.

Since 1970, 387 applications by telcos to provide cable television service have been granted, serving communities with a combined population of over one million. Only five of the 418 total applications in that time have not been granted. (Seventeen others were withdrawn by the applicant.) Only nine of the applications made through January 1990 are still pending. Thus, 99 percent of such applications (387 out of the 392 cases where action has been completed) have been routinely approved. It typically has taken two or three months for final action to be completed.

Year	Filed	Opposed	Dismissed Without Opposition	Denied	Granted*	Average Process Time (in days)
1970	6	0	0	0	3	352
1971	9	0	1	0	9	163
1972	1	0	0	0	2	371
1973	23	0	0	0	1	142
1974	12	0	1	1	34	253
1975	2	0	0	0	2	117
1976	4	0	0	0	2	249
1977	1	0	0	0	0	297
1978	5	0	0	1	6	141
1979	24	0	1	0	2	273
1980	58	2	2	1	33	208
1981	40	19	3	1	66	101
1982	4	9	7	0	9	94
1983	17	1	0	0	9	68
1984	80	0	1	1	79	70
1985	34	0	2	0	31	128
1986	19	0	0	0	25	78
1987	19	0	0	0	15	60
1988	32	0	0	0	34	60
1989	22	1**	0	0	22	69
1990	6	0	0	0	3	N/A
Total	418	32	17	5	387	

* Applications granted in this year may have been filed in a previous year.

** A number of cable interests opposed a waiver application by GTE to build a cable system in Cerritos, California, a city of 50,000 in the middle of the Los Angeles metropolitan area. The FCC granted the waiver.

Sources: FCC W-602 Log and Section 214 Log.

February 1990

Mr. WISE. Thank you very much, Mr. Bresnan. I appreciate your presentation.

I would like to note that part of the reason for this hearing and part of the reason for concern is that in the survey that was performed by the West Virginia Consumer Advocate Division and made a part of this record, a survey of 12 cities in the State of West Virginia—and I don't mean to make this a hearing on West Virginia but I do think it's got a story to tell and it's representative of major parts of our country.

But I note that in the survey that was performed, percentage change from 1986 to 1989—and these are the questions I know you're getting in other forums besides this one—that out of 12 cities I believe 7 of those cities saw the number of channels increasing but the rates increasing at a higher rate. That's No. 1.

I will in fairness note that in two of those cases the number of channels increased greater on a percentage basis than the rates increased. In the case of Huntington the channels increased 158 percent and the rates went up 48 percent in the same period.

I would also note that in the capitol city of Charleston the channels increased 73 percent and the rates went up 109 percent.

I would also note that in 8 of the 12 the rates went up greater than the rate increase that was found to be the average by the General Accounting Office of 29 percent over that period.

I would also note that the conclusion reached by the consumer advocate is that in that area we had companies offering 8 percent fewer channels at a basic monthly rate of 10 percent higher than surrounding cities outside the State surveyed and the result is a rate per channel 20 percent higher than the surrounding States.

Also there is a frustration growing that consumers don't have a place to go to deal with this. There is franchising. I think you note that in your statement, that the cities have some ability to regulate through the franchising award. The fact is that in a lot of rural areas and has been testified to there isn't any franchising.

The town of Grantsville, for instance, or the town of Clendenin where I'm from, has a part-time mayor and a somewhat full-time secretary and a volunteer fire department and no volunteer cable regulators. So our cable company goes essentially unregulated. A decent bunch of folks and they're trying hard. But, I mean, there's absolutely no place I can go.

I can't go to the consumer advocate. He doesn't have any control over it. I can't go to the city. We're actually outside the city. They have no control over it. I can't go to the State PSC. I can't go to the FCC if I'm concerned about rates.

Whom do I go to?

So that's part of the frustration.

I would like to ask first of all whether you agree with the present crossownership restrictions on telephone companies in rural areas or do you think they could be increased from the 2,500 to a higher figure, particularly in areas that cable TV doesn't seem to serve?

Mr. BRESNAN. I agree with the present restrictions. I think they're working. And I think increasing the cap is addressing the wrong direction. I mean, what I seem to hear is that there's concern about the very rural, very sparsely populated areas. I don't think it helps those areas by increasing the cap so they can go into the larger markets.

You heard the people on the panel just immediately before me saying that there are certain areas they can't go into either.

So I think by increasing the cap, I don't think really addresses the problem.

I think that the restrictions are valid and I really think that a lot of these cases the cable companies probably can more easily serve them, those rural areas, than the telephone companies. Because if you think it through, the telephone companies while they have poles and they have a base of operations out there, they have no cable operations in those rural areas.

What they're trying to do is piggyback a cable operation on top of a telephone operation. They're saying "because we're there, we can spread some costs, we can kind of cross-subsidize the cable with the telephone, and we can offer the whole thing."

But if you think it through, a cable operator who happens to maybe be nearby—I realize this doesn't fit all situations—you have to look at each one individually—but if there is a cable operator—we're operating in many of our operations, we're operating small communities within a 50-mile radius of a base operation that we have. So we can get out there and serve those. We have the people. We have the test equipment. We have the cable headline. We have all of the vehicles and the trained personnel and so forth in the cable business, not telephone. We don't know anything about telephones. We have the cable expertise and we have the cable equipment.

So if you're going to add it on as an incremental service, we can do it better and we are doing it in a lot of the areas. In my area, for example, where we operate—and I should tell you we operate in Michigan, Minnesota, Wisconsin, and Georgia and we are moving into Alabama soon—but our last 2 years, 1989 and 1990 capital projects, include building in areas with four customers a mile, eight customers a mile, six—I'm reading the smaller ones obviously to give you the impression of how far down we go—6, 18, 11, 11, 11, 11, 11, 7, 8—we're going way down. And we can because we have the basic cable operation there.

So I think it's misleading to think you can just take a telephone company and also provide cable service economically.

Mr. **Wise**. Mr. Bresnan, in rural areas where people have few alternatives for entertainment, cultural events, and so on, cable customers seem to be pretty much a captive audience.

Incidentally, on my hill they're not as sanguine about satellite service since most of it got blacked out within the last couple of years and the complaint has been historically up until the last few months at least, and I've not checked since then, in fact I'm afraid to ask. Every time I stop off I always get hit with the next set of blackouts. But the complaint has been that the cable companies yet will offer satellite dish owners a program combination but at often a higher cost than what the cable service offers.

Mr. **Bresnan**. That's totally untrue.

First of all——

Mr. **Wise**. Well, it's true to them. They're getting quoted.

Mr. **Bresnan**. As I said, we're offering cable programming to satellite dish owners. We have over 2,000 customers taking it from us and we have to be competitive. They've got a whole variety of places they can get the cable programming. There's a number of program packagers just as we're doing that sign up for the rights for those programs, buy them wholesale, and sell them retail. That's what we're in the business of doing. In fact they can go directly to the programmers themselves and do it.

So that's untrue.

They are paying more to the programmer than we're paying. In other words, a lot of them think they ought to be able to buy it at our wholesale cost. I think you can easily understand if we're serving 135,000 basic cable customers and another 2,200 satellite customers, we represent one bill for that cable programmer. They bill us and we in turn bill each of our customers. If they have to bill an individual customer and collect from him and worry about bad debts and so forth, a cable programmer a couple of thousand miles from that customer, I don't think it's fair to expect a cable programmer would sell to that customer for the same wholesale rate that he sells to a business on a bulk basis where he knows where that business person is and he has a right to cut that person off if he doesn't pay his bill and the business person would be in deep trouble.

So, you know, it's not a comparable thing.

As a matter of fact, we have conducted studies and will be very happy to submit to you later information that shows those people are getting their services in many cases for less than cable customers are paying.

Mr. **Wise**. If you would submit that for the record. But let me continue with my question that cable customers—satellite dishes aside for a second—are pretty much a captive audience. Service has to be pretty bad to force you to drop the service and there's no competition out there.

[Information referred to contained in subcommittee files.]

Mr. **Wise**. Under these circumstances, what incentives does a cable operator have to remain attentive to the subscribers?

As I say, I know that our own area I can probably pick one off-the-air station fairly well. I can get another network station moderately well. I'm out of luck for the third. Public TV, CNN, and of course that most precious programming of all, C-SPAN, is totally beyond us.

Mr. **Bresnan**. Well, first of all, the cable operators by and large are doing a good job. But I have no problem with Federal oversight of cable quality, none whatsoever.

That wouldn't change our operations if there were Federal oversight of cable quality.

Mr. **Wise**. Is there presently any?

Mr. **Bresnan**. Well, I'm not sure where it stands at the moment. There are some FCC rules on system technology but I'd have to submit that to you.

[Information not furnished.]

Mr. **Bresnan**. It's not an issue with us frankly because we operate an excellent service and take a great deal of pride in it. But I can see where that could be an issue. You know, if you have a person not operating well. As I say, that would be no problem for me whatsoever.

I should also say that the cable industry itself, the National Cable Television Association, has formed an ad hoc committee—it's a committee of cable operators—to review cable operations and generally come up with a recommended code of operations that cable operators would comply with. Now, obviously the antitrust rules prevent that from being required but I don't think there's anything to prevent the government from taking those recommended policies and putting them into some kind of regulations.

So there is a serious effort on behalf of the industry to take care of those problems that may exist.

Mr. **Wise**. Thank you. Mr. McCandless.

Mr. **McCandless**. Thank you, Mr. Chairman.

Mr. Bresnan, you're booked in here as representing the National Cable Television Association as a member of the board of directors which would include all size cable operations?

Mr. **Bresnan**. They have in their membership all sizes, yes.

Mr. **McCandless**. Roughly how many members do they have? 200? 2,000?

Mr. **Bresnan**. We'll get you the list. It would be in the thousands.

[Referenced information, "Directory of Top 50 MSOs." is contained in subcommittee files, not all members are listed.]

Mr. **McCandless**. So it's representative of a large portion of those who provide the service?

Mr. **Bresnan**. Yes, sir.

Mr. **McCandless**. It appears that in some way or form the current rules of the game are going to be changed. And it seems to center around quality of service, rate structures, and in some cases programming.

Representing your association and having been involved as a board of director in formulating policy, what would you, Mr. Bresnan, see as the areas of need and what would you, if you had your druthers like to see in the way of a level of regulation, at what level if there is to be regulation?

Mr. **Wise**. Basically what he's asking you is do you prefer to be boiled in oil or drawn and quartered?

[Laughter.]

Mr. **Bresnan**. Yes. I read between the lines.

First of all——

Mr. **McCandless**. Let me build on his comment here. I don't want you to be boiled in oil. But the problem that I have had in my district with this service and in another life semiregulating it, was that as long as you got the super bowl game all the way through, that month's cable bill was not too bad. But if somebody had touted for weeks a miniseries and the signal went out in the middle of the miniseries, then it seemed that the number of complaints was in direct proportion to that outage.

So when we're talking about quality of service, obviously it has a link to how much people are willing to pay. It's become somewhat accepted that maybe we need to go back in California and make it a public utility. I don't know. This is why we're holding the hearings.

The emphasis of the hearings are obviously on the rural aspect of it but I'm also interested in this part.

Mr. **Bresnan**. I think it's too early to tell as to the rate issue whether the deregulation is working or not working. I personally believe it's working.

There was an increase in rates and as the chairman said in many cases in services, too, after deregulation and that was to be expected. You have to realize we were held down. We were really held down in many, many areas, way below the cost of the rate of inflation for years and years. So I don't think anybody expected when they deregulated that there wouldn't be a little catch up. So there has been a little catch up. They talk about horrendous percentages but it's a few bucks a month in most cases.

Now what's happened is that it's pretty much leveled off. In fact for the last half of—excuse me—for all of 1989 the CPI was 4.6 percent, basic cable rate increases were 3.8 percent. So we're below the CPI in 1989.

There was for a couple of years some catch up.

I think what my recommendation is, since you're asking for it, that they just hold off for a little bit and see what happens. If it doesn't work, then deal with it. But I think it is going to work. I think that the catch up is over and that you're going to see reasonable increases.

I would hate to see it regulated because the tremendous development of programming that has occurred over the last 10, 12 years by the cable industry has been because we have had the freedom to make those investments you spoke about earlier, to take those risks, to make those investments.

If we were a regulated industry that could not charge for that programming, we wouldn't be able to sign up for the CNNs and all of those things.

So I think it would be a step backward, to put a lid on the creativity that has distinguished our industry over the last decade or more.

Mr. **McCandless**. Given what you've said, then, and moving forward with it, absent any changes in the Federal programs that address the cable associations, is there a means by which there could be some self-industrial regulatory process?

Mr. **Bresnan**. Self-regulatory?

Mr. **McCandless**. Yes.

Mr. **Bresnan**. Yes. That's what I spoke about a minute ago. Within our own industry we have a committee that is developing a set of guidelines under which we should operate and it deals with all of the areas that you would probably be concerned about the quality of service, outages, answering the telephone, getting out to repair, all of those types of things.

We're trying to establish some standards.

As I said, we are somewhat inhibited by the antitrust laws in enforcing compliance with those. But we hope to create a set of standards by which most operators would operate and which government could use perhaps as a reasonable standard, the Federal Government, for example.

Mr. **McCandless**. In your prepared remarks, and I'm curious about this, you went into detail about the number of services per mile that dropped to, I think you said, five now from a much higher number earlier.

Mr. **Bresnan**. Right.

Mr. **McCandless**. What has actually contributed to that? The cost of the cable per mile has not changed that much.

What is it that has permitted you to do that?

Mr. **Bresnan**. We have a larger base now and there's a certain amount of subsidization that actually comes from the core operation and helps provide service to the less densely populated areas.

I would say that the cost generally to the very sparse areas is usually higher—a higher monthly charge. So there is some offsetting of that additional cost. It costs a lot more to serve a rural area on a per customer basis as you might expect. In one of our typical communities we might have, say, 80 customers a mile in the core community and we may serve down to 10 or 5 customers a mile inside.

Obviously it costs a lot more to serve those five homes per mile than it does to serve 80 homes a mile.

Part of those costs are frankly subsidized to some extent because instead of taking a fully allocated approach, we take an incremental approach to our costs of serving them and part of the costs are offset by a little higher fee to the rural areas.

Mr. **McCandless**. Thank you. Thank you, Mr. Chairman.

Mr. **Wise**. Thank you.

A final set of questions, and you've touched on this, Mr. Bresnan: How prevalent is the use of fiber optic technology in cable systems today?

Mr. **Bresnan**. It's used today principally for trunk lines and for what we call "dead runs" where you're not serving customers.

Fiber today is not practical. By the way, I don't want to sound like I'm antifiber by any means because I used to be president before starting my own company, I was president of Teleprompter Cable TV. In 1976 we introduced the first commercial use of fiber optic technology in Manhattan in a very short run in a single channel but it worked and it proved a point. Then in 1978 in Lompoc, CA, we put a 12-mile run, 12 channel run in.

But the problem is not that fiber optics doesn't work because it does work. It worked in 1976; it works today.

The problem is the cost. It's mainly—the cost of the fiber itself is coming down because it's just glass which is made out of sand and then a plastic wrapping and stuff and a few other things.

But as they get to producing that stuff in large quantities, the cost of the fiber will come way down and it is coming down. One of the other witnesses referred to that.

The big cost is in the converting the electronic signal to a light signal and then at the other end converting it back. The laser transmitter that changes the electronic signal to a light signal is very expensive and if you have to detect the light signal in each home and convert it back to electronic signal, it gets extremely expensive.

It just is not cost effective. It's not that you can't do it technologically. But, it's not any better than coaxial cable and it's just a whole lot more expensive.

Where fiber has its big advantage is in long runs because the loss of the fiber is so minimal that you can go great distances without a repeater amplifier. Each time you put a repeater amplifier in a line, you add a very small imperceptible amount of degradation to the signal. Imperceptible to the human eye for one amplifier. But as you accumulate those amplifiers in cascading them over long distances, pretty soon the degradation is perceptible and that's not what we want.

So you can use fiber for long distances.

Mr. **Wise**. How long a distance are we talking about?

Mr. **Bresnan**. To give you an idea, with fiber you can run about 10 miles without an amplifier, give or take; whereas, with cable, say a 60-channel cable system, you'd have 2½ amplifiers per mile. That gives you an idea of the difference. It's extremely costly but it's very good for taking the signal from one point to another and then distributing it by way of coaxial cable.

A lot of cable companies use fiber now, particularly in big cities. Fiber is really being used more in big cities right now than it is in the rural areas. There's some use in rural areas for trunking. One of the witnesses here before talked about trunking his telephone lines. It's good for that.

That's really where it's being used is in the big cities where they have long cascades of amplifiers with typical technology so they can get the signal to hub points around town.

Mr. **Wise**. Can today's cable offer consumers use of interactive video services, home banking, educational opportunities, those kinds of things?

Mr. **Bresnan**. You're touching on what I spoke about in my prepared remarks.

Today's technology—and by that I'm combining telephone and cable.

Mr. **Wise**. When you say "cable," are you saying coaxial?

Mr. **Bresnan**. Coaxial cable.

Coaxial cable and telephone together can provide you any service you want right now and there's no need to rip up all that plant and put in new stuff at tremendous cost to the customer. All of these services can be offered.

Even—I'm sorry Congressman English is not here right now because he was talking about the educational aspect—you can use cable and we installed a cable trunk in our Sault St. Marie system tying schools together—Sault St. Marie, MI. There you can use telephone and one-way cable. The teacher doesn't really have to see the student. The teacher doesn't really have to—and let's be practical about this. The teacher doesn't have to hear a page being turned or whether he is looking back at the other student to copy.

What we envision in these cases where you use television for education, you have TV set but you also have a proctor in the room. You have a proctor that facilitates the class, keeps order. Though that proctor may not be expert in the particular subject matter being dealt with, you have the expert teacher from afar over television. The students can see that person, can see the props or blackboard, whatever the teacher has. You can have a simple speakerphone setting on the proctor's desk and the teacher's desk and the students can ask whatever questions they want of the teacher.

That's today's technology. Telephone upstream, cable downstream.

Mr. WISE. Thank you very much, Mr. Bresnan. We appreciate your coming.

Our final panel and we appreciate their patience, represents both the FCC and National Telecommunications and Information Administration. We have William F. Maher, Associate Administrator of the Office of Policy Analysis and Development, National Telecommunications and Information Administration, the Department of Commerce.

Also we have on the panel Kenneth Robinson, Senior Advisor to the Chairman of the Federal Communications Commission.

Gentlemen, I appreciate both of you being here. If you would raise your right hands.

[Witnesses sworn.]

Mr. WISE. Thank you. Mr. Maher, why don't you start your statement. Your written statement will be made a part of the record in its entirety.

STATEMENT OF WILLIAM F. MAHER, ASSOCIATE ADMINISTRATOR, OFFICE OF POLICY ANALYSIS AND DEVELOPMENT, NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

Mr. MAHER. Thank you, Mr. Chairman and good morning. It's a pleasure for me to appear before you on behalf of the National Telecommunications and Information Administration to address the subject of cable television in rural America.

The issue of telecommunications generally in rural America is very important to NTIA. Our agency is sponsoring a conference on rural telecommunications issues to be held here in Washington on March 2.

Moreover, NTIA has already begun a major policy study of the state of the U.S. telecommunications infrastructure. One focus of that study is on how investment in telecommunications can spur rural economic development.

NTIA's study is examining the role of advanced telecommunications in the delivery of critical services, particularly health care and education, in rural areas.

From NTIA's perspective there are two overreaching cable policy issues of concern to rural television viewers: Availability of service and the conditions under which rural consumers receive service.

First, a core concern is whether television programming is available to rural America. Cable television is a prominent way of providing the broad choice of programming that Americans have come to expect.

However, one could question whether rural areas have benefited fully from the explosive growth of cable television over the past decade.

For example, about 18 percent of all U.S. households—many of which are in rural areas—do not have access to cable television service.

One way to increase programming choices to these areas could be through expanded provision of cable service by local telephone companies, which might be able to realize efficiencies from joint provision of voice and video services that traditional cable operators cannot.

As we've heard today, the Cable Act and the FCC's rules generally prohibit telephone companies from providing cable service, or owning a cable system, within their local telephone service areas.

NTIA recognizes that rural areas present unique issues and believes that the FCC should consider changing its rules to promote the increased provision of cable service by telephone companies in rural areas.

One way to increase the potential for cable service to rural subscribers could be to broaden the current rural exemption to the crossownership prohibition to encompass areas with populations greater than the present ceiling of 2,500 residents.

Some have suggested that such a limited change in the current crossownership restrictions would permit the growth of more advanced technologies and better services to rural customers.

A second core issue involves the conditions under which rural viewers receive television. Even in those areas currently served by cable, there is some question whether subscribers enjoy a level of service comparable to that of their urban and suburban counterparts.

NTIA believes that one way of expanding rural choice in programming may well be increased competition to incumbent cable operators via alternative distribution media.

One existing alternative is the home satellite dish industry. In this regard, NTIA is aware of complaints by distributors of programming to home satellite dishes of difficulties obtaining rights to receive or to retransmit cable network programming.

These problems allegedly take the form of refusal by cable networks to deal with home satellite dish program distributors. In other cases, the alleged difficulties appear in the form of rates for programming substantially higher than those paid by competing cable systems.

Now, the FCC is currently examining these issues in its pending proceeding on the structure of the cable industry.

Congress has already expressed concern over the availability of programming to competing distribution media.

NTIA expects to participate in these deliberations on this important matter.

I'd like to conclude by noting that the FCC recently began to reexamine its so-called effective competition standard, which determines when government agencies may regulate basic cable rates.

NTIA intends to participate in that proceeding. I wish to note that although the regulation might improve control of cable rates, it would not necessarily increase the number of services available to rural cable subscribers. In fact, the opposite could be true. If regulators set basic rates too low, cable operators could lack the funds necessary to add new basic programming.

These factors, I believe, deserve careful consideration in any policy discussion of rural cable issues.

Thank you very much for this opportunity to present NTIA's views. I'd be glad to answer any questions you might have.

[The prepared statement of Mr. Maher follows:]

Statement of

William F. Maher
Associate Administrator
Office of Policy Analysis and Development
National Telecommunications and Information Administration
United States Department of Commerce

Before the

Subcommittee on Government Information, Justice, and Agriculture
Committee on Government Operations
United States House of Representatives

on

Cable Television in Rural Areas

February 7, 1990

Good morning, Mr. Chairman and subcommittee members. It is a pleasure for me to appear before you on behalf of the National Telecommunications and Information Administration (NTIA) to address the subject of cable television in rural America. I have prepared a brief oral statement. I request that my complete written statement be entered into the record of these Hearings.

NTIA Activities in Rural Telecommunications

NTIA is the Executive branch agency primarily responsible for developing U.S. telecommunications policy. The issue of telecommunications in rural America is very important to NTIA. For that reason, NTIA is sponsoring a conference on rural telecommunications issues to be held here in Washington on March 2, 1990. Second, NTIA has already begun a major policy study of the state of the U.S. telecommunications infrastructure, that started with publication of a comprehensive Notice of Inquiry in the Federal Register on January 9, 1990. One focus of that study is on how investment in telecommunications can spur rural economic development. NTIA's study is also examining the policy issues surrounding the current laws and regulations that generally prohibit local telephone companies from providing video programming within their service areas. It explores whether a change in these restrictions would result in the deployment of more advanced capabilities in our public networks, including broadband transport. Moreover, NTIA's study is examining the role of advanced telecommunications in the delivery of critical services, particularly health care and education, in rural areas.

Third, NTIA is planning to file comments in the FCC's pending proceeding on the structure of the cable industry, and intends to participate in the FCC's pending rulemaking on the "effective competition" standard of the Cable Communications Policy Act of 1984 (the Cable Act).

From NTIA's perspective, there are two over-arching communications policy issues of concern to rural television viewers -- availability of service, and the conditions under which rural consumers receive service. I would like to discuss each of these broad issues in turn.

Rural Availability of Television

First, a core concern is whether television programming -- a primary source of information and entertainment for audiences throughout America -- is available to rural America. NTIA believes that a fundamental U.S. policy goal should be the development of an environment in which communications services, including television, are widely available throughout America. For most households, "television" has come to mean an ever-expanding range of programming from which to choose. Cable television is a prominent way of providing this broad choice.

However, there is reason to question whether rural areas have benefited fully from the explosive growth of cable television over the past decade. For example, about 18 percent of all U.S. households, many of which are in rural areas, do not have access to cable television service. NTIA is very concerned that residents of rural areas have an opportunity to enjoy the range of programming choices available to urban and suburban citizens.

One way to achieve this goal could be through expanded provision of cable service by local telephone companies. Telephone companies might be able to realize efficiencies from joint provision of voice and video services that would allow them to provide cable service in areas that would not be attractive to a traditional cable operator.

However, Section 613(b) of the Cable Act and the FCC's rules generally prohibit telephone companies from providing cable service, or owning a cable system, within their local telephone service areas. NTIA's 1988 Video Study concluded that the current cross-ownership provisions should remain largely intact, but recommended that they be modified to encourage telephone companies to provide distribution facilities on a common carrier basis to unaffiliated video programmers. NTIA is currently reexamining the issue of potential telephone company entry into video programming in our infrastructure study. We recognize that rural areas present unique issues, and believe that the FCC should consider changing its rules to promote the increased provision of cable services by telephone companies in rural areas.

The Cable Act contains a "rural exemption" from the prohibition, which the FCC has implemented through its rules by permitting telephone company provision of cable service for places, outside of urbanized areas, with fewer than 2,500 residents. Thus, telephone companies may be prohibited from providing cable service in areas that do not satisfy the FCC's criteria, but nonetheless are both rural in fact, and underserved.

One way to increase the potential for cable service to rural areas could be to broaden the rural exemption to encompass areas with populations greater than the present ceiling. In this regard, the FCC initiated an inquiry on cable/telephone crossownership in 1988 that proposed expansion of this exemption. That inquiry is still pending. Some parties to that proceeding, including several states, recommended that the ceiling be raised to 5000; others have recommended a ceiling of 10,000.

Such a limited change in the current crossownership restrictions would serve the interests of rural consumers in at least two ways. While this change would not guarantee cable service to rural consumers, it would give telephone companies the opportunity to deliver television service in where it is not already provided. In addition, as some have suggested, such a change could potentially promote the growth of more advanced technologies and networks for video delivery, and could conceivably lead to further advancements toward telephone company provision of fiber optic cable to the home.

Conditions of Service in Rural Areas

A second major issue involves the conditions under which rural viewers receive television. Even in those rural areas currently served by cable, there is some question whether subscribers enjoy a level of service comparable to that of their urban and suburban counterparts.

To examine this issue, NTIA staff gathered data on the rates charged and the services provided by a random sample of some 200 U.S. cable systems, using data listed in the 1989 Television and Cable Factbook. NTIA staff then compared rates and services for the sampled systems in the 100 largest broadcast television markets (the "urban" systems) with those cable systems lying outside all television markets (which were assumed to be "rural" systems). NTIA staff found that the average "rural" system in this sample carried about one-half as many basic and pay cable services as the average "urban" system. Average basic rates among rural systems were slightly less than the rates charged by urban systems; thus the average cost per channel delivered was about double for rural systems as compared to urban systems.

There may be cause for concern about this apparent disparity in the level of cable service to rural areas. Obviously, there may be many reasons for this disparity. NTIA believes that one solution may well be increased competition to incumbent cable operators via alternative distributors when sufficient demand would permits. There are a number of other types of providers of multichannel television service that could compete with cable operators, including multichannel multipoint distribution systems and the home satellite dish industry. In this regard, NTIA understands that more than 2 million U.S. households are now equipped with satellite receivers, the bulk of them located in areas where existing television service is inadequate or nonexistent.

Programming Availability

For such alternative providers to be viable competitors of incumbent cable operators, they need access to comparable (or substitutable) programming, at competitive prices. NTIA is aware of complaints by distributors of programming to home satellite dishes and others of difficulties obtaining rights to receive or to retransmit cable networks. In some cases, these problems allegedly take the form of refusals by cable networks to deal with home satellite dish owners or marketers. In other cases, the alleged difficulties appear to take the form of rates substantially higher than those paid by competing cable systems.

Some people attribute these problems to the presence of vertical integration within the cable industry, the fact that many cable networks, which are a highly valued source of programming to home satellite dishes, are owned by firms that also own cable systems. They contend that such common ownership gives cable firms the incentive to deny programming to home satellite dishes and other distribution media in order to insulate co-owned cable systems from competition. NTIA examined one aspect of this issue in its 1988 Video Study, and found no conclusive connection between cable vertical integration and denial of service to another competing distribution medium, MMDS. Although the question warrants further study (which the FCC has undertaken), distributors' difficulties in obtaining desirable cable programming for transmission to dish owners may be caused by factors other than vertical integration. NTIA is concerned, however, about the alleged market practices of some vertically integrated cable service providers.

There are ways to make attractive programming more readily available to home satellite dishes. One solution may simply be to encourage firms interested in serving home satellite dishes to develop their own programming services. This, of course, is what the cable industry has done over the years to loosen its dependence on broadcast signals, and thus differentiate its product from competing broadcasters.

Another possibility would be to preclude vertical integration between cable systems and cable networks, and require divestiture of programming interests currently held by cable systems. However, this approach has a number of flaws. It has not been definitively established that vertical integration has resulted in the unavailability of programming. Moreover, divestiture would eliminate the benefits of vertical integration, such as reduced program acquisition costs for cable systems and the ability to share risks of program development among producers and purchasers. The ultimate result could be higher rates and fewer services for viewers. In this regard, one should keep in mind that a large investment from cable operators helped Turner Broadcasting weather a difficult period after its purchase of the MGM film library. Similarly, financial support from cable operators helped keep the Discovery Channel afloat; it is now one of the fastest growing cable networks.

Alternatively, there could be a requirement that cable network programming be made available to competing providers of multichannel television service on nondiscriminatory terms. Such a requirement would involve policy tradeoffs that require careful analysis. Although it could promote greater competition among different types of video providers, it would preclude cable operators (or any other competing providers) from acquiring and protecting exclusive rights to programming. Most participants in the mass media industry highly value such exclusivity. Among other things, exclusivity permits program producers to maximize their return on their programming investments, thus increasing their incentives to create more programming. Exclusivity can also give program distributors a means of distinguishing themselves from their rivals. Before adopting a nondiscriminatory access requirement, the FCC or the Congress would have to weigh the benefits of increased competition and the costs associated with a loss of program exclusivity. It is not easy to determine where the consumer's interest lies.

The FCC is currently examining these issues in its pending proceeding on the structure of the cable industry. Congress has also expressed concern over vertical integration and the availability of programming to competing distribution media, especially in Senator Danforth's cable bill, S. 1880. NTIA expects to participate in these deliberations on this important matter.

Possible Rural Impacts of Cable Regulation

I would like to conclude by briefly addressing another issue. The FCC recently commenced a rulemaking on cable services that will reexamine its "effective competition" standard, which determines when government agencies may regulate basic cable rates. NTIA intends to participate in this proceeding. Although we have not yet formulated our position on this specific issue, NTIA believes that increased competition is the best mechanism for improving cable service to rural subscribers in the long term. I would like to make two points, however, relevant to rural cable concerns with regulation.

First, regulation would not necessarily increase the number of services available to rural cable subscribers. In fact, the opposite could be true. If regulators set basic rates too low, cable operators could lack the funds necessary to add new basic programming.

Second, if the FCC modifies its "effective competition" standard, the short-term result could well be increased regulation in rural areas, regardless of precisely how the standard is redefined. A new definition of effective competition necessarily would be linked to the presence of competing providers (whether broadcast signals, a second cable operator, or a viable home satellite dish operation) in a particular cable community. Since rural areas are less likely than other parts of the country to have such video competitors, it seems much less likely that "effective competition" will be deemed to exist in rural areas.

These factors deserve careful consideration in any policy discussion of cable rate regulation.

Thank you very much for this opportunity to present NTIA's views on this very important set of issues, which NTIA will continue to consider in its policy studies. I will be glad to answer any questions you may have.

Mr. Wise. Thank you, Mr. Maher.
Mr. Robinson.

STATEMENT OF KENNETH ROBINSON, SENIOR ADVISOR TO THE CHAIRMAN, FEDERAL COMMUNICATIONS COMMISSION

Mr. Robinson. Thank you very much, Mr. Chairman.

In the interests of time, let me succinctly summarize four of the major points which are in my statement.

The first is that the statement goes into a discussion of the factual situation against which telecommunications, rural development, and the like should be assessed.

It's quite clear that the United States is perhaps the most urbanized of the major countries in terms of the percentage of our population living in urbanized areas.

By the same token, the size of the country is such that we have at least 40 and potentially as many as 60 million people living in nonurban areas. Their interests are of great importance to my agency as well as to the U.S. Government. And as Congressman English pointed out this morning, telecommunications can make a major contribution both to the quality of life that they enjoy and the character of the economic opportunities which are available to them.

The second point is that, at present, the United States maintains a number of programs which are designed to assure that residents of rural areas have parity of communications opportunity. Those programs involve subsidies which are developed chiefly by the Federal Communications Commission and administered by our common carrier bureau. They involve sums of money which may seem large but in relative terms were a very small fraction of the $159 billion regulated telephone economy last year.

For example, our high cost fund which offsets high costs for providing rural telephone service last year was $340 million. That's a very, very small percentage of the total telephone economy.

A third point which is contained in the statement is the fact that the FCC makes a conscientious effort in a number of different ways to expand the communications options which are available to people in rural areas. These include our low power television licensing programs, sanctioning direct broadcast satellites, special mobile radio efforts, licensing of fixed cellular, and the like.

Let me turn now to the subject which the subcommittee has heard the most about this morning and that is cable television.

In respect of the cable television industry the FCC under Chairman Sikes' leadership only very recently launched two major initiatives. The first of these initiatives involves accelerating the study of the cable industry, which was the FCC was directed by Congress to make in the 1984 Cable Communications legislation.

We plan, according to the Chairman, to submit our report to Congress in July of this year. That is many months in advance of the statutory deadline.

In connection with that study the FCC for the first time in its history, I should also note, has undertaken a series of formal fact-gathering field hearings, the first of which will be held in Los Angeles. Additional hearings will be held outside of Washington in major cities where we hope to hear both from urban as well as rural residents.

Chairman Sikes feels very strongly that it is important for the people outside of Washington be given a chance to express their views on these issues that obviously concern them a great deal.

The second major initiative which we have taken deals with the reexamination of our 1985 "effective competition" standard that was, again, a topic of discussion this morning, the so-called three signal standard.

We issued a notice of proposed rulemaking to reexamine that standard on January 11. Comments are due on April 6.

Again, Chairman Sikes has indicated every intention to complete that rulemaking and to take action not later than July of this year.

I hope that those two initiatives indicate to the committee the FCC is sensitive to the great concerns which we have heard, not only from this subcommittee, but from many others in Congress regarding the status of the cable television industry.

Let me conclude, Mr. Chairman, by thanking the subcommittee and its staff for having these hearings. Personally I feel that communications, which would include cable communications, will be a very major part of our economy and society and I am always very pleased to see Congress taking the time to examine issues that I feel very strongly about and spend a great deal of time working on.

Thank you again.

[The prepared statement of Mr. Robinson follows:]

Statement of

Kenneth Robinson
Senior Legal Adviser to the Chairman
Federal Communications Commission

Before the

Subcommittee on Government Information,
Justice, and Agriculture

Committee on Government Operations

House of Representatives

on

Telecommunications Issues Affecting Rural America
Including Cable Television Service

Wednesday, February 7, 1990

Mr. Chairman and Members of the Subcommittee:

Thank you for this opportunity briefly to review several of the key policies and responsibilities of the Federal Communications Commission (FCC) regarding communications services for rural Americans, and particularly the initiatives which have been taken recently under Chairman Sikes's leadership with respect to cable television and related video services.

General Importance of Rural Services

Today, Mr. Chairman, the United States ranks among the most urbanized of countries. More than three-quarters of Americans reside in metropolitan areas, nearly 90 percent live and work on some 3 percent of our land, and, indeed, more than 100 million live within 50 miles of our coasts. Notwithstanding this intense population concentration and urbanization, however, rural America remains a critical national economic, social, political, and philosophical component.

Rural Americans comprise almost 40 million people, living and working in a diversity of communities dependent chiefly on one of our largest single national enterprises -- agriculture --but also mining, forest products, and, in some instances, manufacturing, leisure, and service industries. Demographically, rural America tends to be older, too often less well-educated, and significantly less affluent than the United States as a whole. Compounding these challenges, the sheer physical size of the United States, and the associated costs of providing both common carrier and other communications services in rural areas, have traditionally presented special regulatory issues.

"Rural" in telecommunications does not always equate with "high cost." But communications costs often are significantly higher in rural areas, and the business and subscriber base across which they can be spread, is typically much smaller. These characteristics have an impact on the level of advertiser-supported broadcast services, as well as the viability of customer-sustained, commercial communications offerings. They tend to curtail the abundance of customer service options and equipment choices.

Special Policy Challenges

Rural communications customers today, nevertheless, are better off than they were just a decade ago. Rural telephone companies commendably have made a substantial investment in new plant and facilities and, indeed, reportedly now have a greater percentage of high-capacity digital electronic switches installed than do many firms serving major urban areas. Cable television, which began as a rural phenomenon, has contributed to the news, information, and entertainment services available to rural Americans. New technologies including mobile satellite and cellular radio should also benefit rural areas. Decisionmakers, however, need always to be alert to at least four concerns, in developing communications policies which will reliably advance the interests of all Americans including rural residents.

First, decisionmakers have to be particularly alert to the stated interests and concerns of rural residents and their representatives. They also need actually to see some of America's remote rural regions themselves. Regulatory assumptions regarding electronic mass media, for instance, usually reflect personal experiences, at least in large part. As a majority of the American public is urban, so too are most communications policymakers. There is thus an unfortunate tendency to extrapolate from the abundance of media choices routinely available in urban areas -- and to assume that rural residents enjoy a comparable video bounty -- when often they do not.

Second, decisionmakers need to bear in mind the high value which rural residents usually accord those communications options they have. Telephone service, for example, while important to urban residents, may be absolutely critical to rural areas as distances may render alternatives infeasible. In the case of electronic mass media, what local broadcast service exists also usually commands strong listener support. The loss of a single radio or television signal -- which might escape significant notice in Cleveland or Los Angeles -- could represent a major blow for the residents of rural communities who simply lack alternatives.

Communications services contribute, and will increasingly contribute, to the overall quality of life which all Americans enjoy. It is also axiomatic that long-term national progress should be assessed not only by output, productivity, and efficiency measures, but also in terms of the means and choices the United States ensures which allow all people to contribute, while enjoying full, healthy, and satisfying lives. It is important to remember the contribution which communications services make, and will make, in this regard.

Third, and while it is true that some procompetitive communications policies might find limited application in certain rural areas, decisionmakers need to remember that rural Americans are as entitled to the benefits of competitive choice as any others. Particularly in communications, where equipment costs regularly decline, what might seem an improbably competitive marketplace today may well, with advances in telecommunications technology, become quite amenable to competition tomorrow.

In general, competition has served the American communications customer well. To the extent reasonably feasible, Government policies should thus continue to aim at ensuring that competition is not simply an urban phenomenon.

Finally, communications policymakers need to be especially aware of the substantial benefits that advanced communications can deliver in areas which might not otherwise have many economic alternatives.

Technological developments have made it possible for corporations to relocate support functions (such as check processing, credit operations, and mailorder fulfillment) to rural areas because of favorable wage and tax rates, lower housing and utility costs, and general quality of life considerations.

Advances in computers, satellite technology, and fiber optics may make it possible to decentralize business functions.

Among leading corporations, Citicorp has been among the most aggressive in capitalizing on some of the comparative advantages offered by less urbanized areas. About half its total office workspace, for example, reportedly is located away from its New York City headquarters. Its Sioux Falls, South Dakota, location is responsible for credit card processing and reporting, and provides a lower cost commercial environment for that part of Citicorp's business which requires little client contact or personal interaction with headquarters. Moreover, companies which began in small towns -- such as Wal-Mart did in Bentonville, Arkansas, or Lands' End did in Dodgeville, Wisconsin, or L.L. Bean's did in Freeport, Maine -- have been able to maintain and expand their operations in those locales.

This is a particularly promising facet of communications industry developments. A principal reason for urbanization trends, both in the United States and abroad, is that rural and small town areas have lagged behind urban areas in terms of job retention and creation. To the extent that communications developments can ameliorate this problem, a result could be more balanced economic development in the United States overall, and thus fewer of the environmental and other pressures and costs which very high levels of population density usually cause. Economic development also provides the revenue base for a broad range of public services; to the extent that rural areas are able to strengthen their economy, they will be better able to provide improved education, health care, public safety, and other necessary services.

Communications Policy Responses

The Communications Act of 1934 places duties on the FCC to regulate in a fashion which will promote both geographic and demographic parity. The preamble of the statute, for example, obligates the agency to ensure universal access to communications to the maximum extent possible, a policy which is reflected, for instance, in a longstanding commitment to maintaining universal telephone service at reasonable and affordable prices. Similarly, the FCC is obliged to seek a "fair, efficient, and equitable" distribution of broadcast signals (47 USC §307(b)). An objective of the 1984 Cable Act, moreover, was to encourage the growth of cable systems, notably in rural and other unserved areas (47 USC §601(2)).

To maintain universal telephone service, the FCC has directed the establishment of a "high cost" program, which helps rural phone companies offset some of the additional service costs which they face. Additionally, the FCC has a strong policy favoring nationwide interstate toll price averaging. An effect of this latter policy is to extend to "thin route" customers the benefits of competitive prices caused by rivalry on major trunk routes. To strengthen broadcasting in rural and less urban areas, the FCC has also licensed low-power television stations, created special classes of both AM and FM radio stations, and currently has underway a major AM radio improvement program which, in part, looks toward permitting power and service-hour changes which would facilitate local community service on the part of radio stations, particularly in rural areas.

The FCC also has initiated a series of actions to enhance mobile communications capabilities, so important in rural areas. It has taken steps to ensure that rural areas enjoy the same array of technologically advanced mobile communications services as urban areas -- and at competitive prices. These services include the Basic Exchange Telecommunications Radio Service (BETRS) and cellular radiotelephone. They also include many private carrier voice and data communications services such as Specialized Mobile Radio Service.

At present, the FCC has under consideration several matters which have the potential to increase both service options and competition in rural areas. Changes have been proposed, for example, in current limits on competition to provide long-distance telephone service in Alaska's remote rural areas. The limits placed on telephone company provision of cable telephone service on a collocated basis are being examined. Changes have been made in the rules governing multimedia, multipoint microwave distribution systems (MMDS) -- so-called "wireless cable" -- to remove any unnecessary regulatory obstacles to the growth of this service, and more reforms should be forthcoming. The FCC has also authorized direct broadcast satellite services, whose U.S. domestic development has been affected by the difficulties in the satellite launch business, but which are currently operating in Europe. The competitive potential of DBS operations is significant; such systems also have promise in terms of broadening customer choice in rural and other areas.

Cable Communications Initiatives

The FCC also has underway proceedings aimed specifically at benefiting rural cable communications. The agency has initiated a major, broadscale inquiry regarding virtually all facets of cable communications, for example, and has promised to provide Congress the results, together with its considered comments and recommendations, by July 1990. Additionally, the FCC has commenced a review of the current "effective competition" standard governing cable service price regulation. The FCC's 1985 standard is pegged to the presence of three or more broadcast signals; where that level of over-the-air service prevails, price regulation is generally barred. The surge in cable subscription rates experienced by many subscribers,

including rural customers, during the 1987-89 timeframe has understandably caused concerns. The rule making proceeding which the FCC has begun will examine the need for changes in the current standard, and should also be concluded by this summer.

The satellite receiver or "backyard dish" sector is another which the FCC has sought to facilitate. The FCC has been a strong proponent of fostering the full and fair competitive circumstances that will ensure that dish owners have reasonable access to the satellite-relayed services which they want and need, especially in areas which are unserved by cable television companies. A comprehensive review of price discrimination allegations was only recently completed and released. That study found significant variations in the prices which satellite distributors of network and "superstation" signals charge satellite and cable "retailers." The FCC will be looking further into this matter. Both because of a longstanding commitment to full and fair competition, and a desire to ensure maximum possible access to video services, the FCC wants to ensure that any anticompetitive or abusive practices are remedied.

Conclusion

Most developed countries have communications policies which endeavor to further the interests of both urban and rural residents. In this regard, however, the United States has more such policies and programs in place than any other. Not only are Federal efforts generally aimed at safeguarding the interests of rural communications customers, the United States also has adopted special programs designed to smooth the ongoing transition toward a much more diverse and competitive communications sector. That special attention to legitimate transitional equities is important. For any costs of policy changes designed to benefit society as a whole should be borne by all, and not inadvertently visited on one particular group --especially if that group, by virtue of lower income, for example, is least able to bear it.

Today, concerns obviously exist regarding cable television prices, service levels, and availability. Those concerns are in fact being addressed, however, within the provisions of current law. If, following the completion in July 1990 of the FCC's ongoing cable television (and related) proceedings, the agency concludes that further steps by Congress are needed, detailed recommendations will be forthcoming.

Mr. **Wise**. Thank you very much. I thank both of you.

I'd just like to note if I had held this hearing about a year and a half ago, wouldn't you both have been here but you would have been representing the other's agency? Wasn't there a reversal?

Mr. **Maher**. We did switch jobs.

Mr. **Wise**. I just wondered. No comment. I was just interested in that.

Mr. Maher, in your prepared statement you stated that in a random sample NTIA found the average cost per cable channel to be about twice as high for rural systems as it is for urban. Could you just comment briefly for the record some of the reasons for that disparity?

Mr. **Maher**. There are a number of reasons, Mr. Chairman, that come to mind. One could be what we heard from the previous panelist; that is, the cable companies in rural areas have higher costs perhaps than those operating in urban areas and the costs could be reflected in their rates. That would be because of the geographical problems and the low population density that we've heard about this morning.

Another possibility would be the fact that many existing rural systems have been in place for quite awhile, so that they do not have the newest technology available.

And some say that these results could be indications of less competition in rural areas than in urban ones. That reason to me is somewhat problematic. I think that we would have to explore quite carefully what the sources of competition would be.

Mr. **Wise**. Mr. Robinson, is there anything you care to add?

Mr. **Robinson**. I don't really have anything to add to Bill Maher's comment.

I would note that is one of the topics which we will be exploring at great length, not only in the field hearings that we will be holding, but also in conjunction with our rulemaking. It's a very common assertion and it's a matter which is of great concern to the members of the FCC as well as to the staff of the FCC.

We certainly do not want to have a situation where there is a marked disparity in prices which people in rural areas pay for service which, as members noted this morning, is regarded by the great majority of the cable subscribing public as close to a public utility.

Mr. **Wise**. Can either of you state a position of your agencies of whether there should be an attempt to lower rural cable rates or at least take steps to keep rural cable rates somewhat the same as urban cable rates similar to the attempts to keep rural telephone rates at a similar level to urban telephone rates?

Mr. **Maher**. NTIA does not have a position on that. As I believe you pointed out earlier in the hearing, Mr. Chairman, there historically have been different regulatory treatments of the telephone and the cable industries. And the fact that there has been a subsidy structure in the telephone industry built up over 30 to 40 years, gives it a bit of a headstart on addressing these kinds of disparities.

The other point, too, is that to the extent there really are higher costs to rural cable operators, some disparities may be justified.

Mr. WISE. The General Accounting Office is currently engaged in a second examination of cable rates. The first study was so well received they're going back for a second round. That'll be played on ESPN.

Isn't the FCC also involved in this study?

Mr. ROBINSON. Yes, Mr. Chairman, that's correct. I'm only a lawyer. I don't understand the vagaries of statistics, polling, and the like.

There were many criticisms made of the initial GAO survey. As part of our survey, which Congress directed us tc do, we are seeking to gather a lot of information. Under Mr. Sikes' leadership we made the determination that it was better for us to go with the General Accounting Office rather than do our own survey, to use their expertise and to, in effect, combine forces. And working with the Energy and Commerce Committee we have done that. We have come up with what I believe is a mutually agreeable poll questionnaire that will be circulated and we hope to get this time results which are more credible, more systematic, perhaps, than was true of the first survey.

Mr. WISE. In this survey are you looking at the disparity in rural rates?

Mr. ROBINSON. I believe that is a question which will be covered in that survey.

Mr. WISE. Because the GAO survey seemed to me to be deficient in one regard. It's awful easy to take potshots after the fact. As you say, crafting these things is fairly difficult. But it seemed to me to be deficient because it was hard to break out rural versus urban.

Mr. ROBINSON. That's correct. And there is a tremendous statistical difficulty in using averages. As a friend of mine who is a Ph.D. in statistics frequently reminds me, the average person in this world is a Chinese woman. So you have to be very careful when you start talking about the average anything.

The average cable rate may conceal an enormous range of variations, much as if you checked very carefully the survey which the West Virginia Consumer Advocate submitted. You will see a tremendous range of rates within just the State of West Virginia.

Mr. WISE. I might note for the record I'm interested in the conclusion that your Ph.D. friend in statistics made because I only took one course in statistics and failed and I would have reached the same conclusion. I always thought the field had come a long way.

I know the FCC if reviewing the "effective competition" standard. My question is how easy is it for a rural area to establish that it qualifies to regulate basic cable rates under the current "effective competition" standard?

This has particular relevance, Mr. Robinson, because I suspect that if Mr. Gregg is correct and the West Virginia legislature does act this year and enact some form of legislation, you're going to be contacted pretty quickly as to how it is that you can define effective competition.

Could you talk about that for a second?

Mr. ROBINSON. My understanding in conversations with the mass media bureau in preparation for these hearings is that while our rule does create a presumption, it is a rebuttable presumption. It's still up to the city or still available to the city with franchising authority to come in and demonstrate to us that three signals are actually not available.

Most FCC rules dealing with broadcast signal coverage, the subcommittee should bear in mind, are based upon predicted contours.

Mr. WISE. Predicted what?

Mr. ROBINSON. Predicted contours, predicted coverage by broadcast stations, particularly an average terrain. Particularly in areas such as West Virginia where you have such tremendous variations in the terrain, those predictions which are very nice when you look at a television fact book, may bear very little relevance to the real world.

If a franchising authority comes to the Commission and says, "yes, we do not have effective competition within our community," my understanding is the FCC permits regulation relatively quickly.

Now, as you pointed out this morning, many communities even though they may have the authority legally to impose regulations, have chosen for one reason or another not to do so.

I don't know whether that will change even if we alter our effective competition standard.

Mr. WISE. In the present process, isn't it true that a franchising authority must sometimes submit a special engineering study?

Mr. ROBINSON. That is correct.

Mr. WISE. Under what circumstances?

Mr. ROBINSON. If they seek to show that there is not coverage of the community by three signals.

Mr. WISE. In every case, then?

Mr. ROBINSON. Usually in every case.

Mr. WISE. How expensive is such a study?

Mr. ROBINSON. I think it would depend very much upon the engineer and the situation. In general an engineering study I would think would run you somewhere between 5 and 15, perhaps higher, thousand dollars. That would certainly be a factor, however, which again we would be looking at in our inquiry.

In fact I should add in that regard that there is in that inquiry the question of whether an over-the-air signal standard at present makes any sense to begin with.

As Chairman Sikes has stated publicly on a number of occasions, the current over-the-air signal delivery system in the United States for at least 50-million cable households may not be an alternative. People are wired into the cable. Our rules assume people can pull out the cable, and put up an antenna. That may be an unrealistic assumption from the standpoint of a regulatory agency.

The second thing which we will be exploring is the contention that broadcast signals are not really an alternative because cable subscribers are looking for what are exclusively cable services C-SPAN I and II, CNN, ESPN, and the like. Those are contentions which people have put forward and which are covered in our inquiry and covered in our effective competition rulemaking notice and will certainly be given very close scrutiny by the currently four and I expect five—by the time the proceeding comes before it—five members of the FCC.

Mr. MAHER. Mr. Chairman.

Mr. WISE. Mr. Maher.

Mr. MAHER. Just to make an additional point on that topic: If the FCC modifies its effective competition standard, the short-term result could well be increased regulation for rural areas. And I think the reason is quite clear from the hearing today.

A new definition of effective competition will most probably be based on the presence of some competing providers, whether they would be over-the-air broadcasters or a second cable system or home satellite dishes in a particular cable community. Since rural areas in general are less likely than urban areas to have such competitors present, then the impact of a new effective competition finding by the FCC may well be greater on rural areas.

Mr. WISE. One concern I have, following up on that, Mr. Maher, is that when you look at other providers I would hope that this time we wouldn't be looking at video stores or outlets, things like that, with the rationale being well, folks can run down to the supermart and pick up a video for the evening and plug it into their VCR.

Would that be within the realm of possibility to be considered as an alternate provider?

Mr. MAHER. I think the FCC will have to use its good judgment in looking at those alternatives. Obviously if you're interested in watching the super bowl, you aren't going to wait until the highlight film is released.

Mr. WISE. Three years later maybe.

Mr. Robinson, just back to the study for a second and you talked about the cost of the study: Would that cost not be prohibitive for many rural franchisers? And I'm going to follow up and ask whether you have any statistics on how many, one, applications have actually been submitted for such regulation, and second, how many have been approved?

Mr. ROBINSON. Quite frankly it seems to me intuitive that for some rural communities that cost would be prohibitive.

Obviously there are a large number of rural jurisdictions in this country. We have 3,000 counties, a large number of which have an extraordinarily small population bases and very, very sparse or no economic bases as well. It could very well be that that is a prohibitive cost.

I have no specific information on that. I would be more than happy to develop that kind of information and submit it to the subcommittee because I think it would be helpful from the standpoint of your record to have that kind of specific information.

[The information referred to appears on p. 381.]

Mr. WISE. It would help the subcommittee a great deal because I think that's one of the genuine oversight issues that the subcommittee would have over the Federal Communications Commission, the extent to which these applications, "A," are being filed, and then the success rate and then what the cost is. Then there is a much more indefinite thing which is harder for you, of course, to come forward with, which is how many were not filed because the cost was prohibitive.

Mr. ROBINSON. That's a good point. My sense, and I would point this out from speaking with the mass media bureau chief and deputy chief, who have responsibility in this area, is that this has not been until very recently an area of significant activity. In other words, it has only been within, say, the past year or less that there has materialized a substantial interest in regulating cable rates.

Mr. **Wise**. Might that be, though, because things were capped until 1986 and then the cap came off and we're starting to see that ripple in.

Mr. **Robinson**. That might well be the case. I mean, it takes any Government agency a certain period of time to respond to the public and I expect that's true in the case of local country or franchising authorities, too.

I would also add, however, that you must bear in mind that under the 1984 Cable Act the municipalities receive a franchise fee of 5 percent of the revenues of the system which generates—and the precise numbers are available from NCTA—hundreds of millions of dollars of revenue for local franchising authorities. So one has a certain conflict of interest situation presented, where the regulator has a certain interest in higher rates. So that may be a reason.

I don't mean to impune the intentions or interests of any State, local, or municipal franchising authority. But I do believe that given the pinch on municipal government right now, that very large amount of money which is flowing by virtue of this statutorily permitted franchise fee might have some bearing on their zeal to rush forward and reduce rates.

Mr. **Wise**. You make a good point on the contingency fee aspect of that. I just offer as a counter that as one who has to run for office every 2 years there's a definite constraining influence because the local government that thinks they're going to reap this great return, the next election may not be the local government anymore.

So I would like for my own record to enter that the thing I hear first about much of the time is the cable rate increase.

The rural telephone systems are offering cable in service areas today under the rural exemption, presently 2,500 residents.

To what extent would expanding the rural exemption increase cable service to rural homes and more to the point, it seems like many definitions of a rural—everyone has their own definition of what's rural area but many seem to focus around the population of 20,000 as a cutoff.

Do either of you have any comments on whether 20,000 makes any sense?

Mr. **Maher**. I have just a brief comment. There are many definitions of what "rural" could mean, what that number might be. The FCC in 1988 initiated an inquiry into the issue of cable telephone company crossowership generally and asked specifically whether the rural exemption should be expanded.

The record in that proceeding shows generally that when parties supported the expansion of the rural exemption, such parties either supported an increase to either 5,000 citizens or 10,000. The rationale for the 5,000 figure was that the Department of Transportation, among others, uses that number as a definition for "rural" and that the factors that went into its selection were comparable to those present in the cable industry.

So there are many definitions.

I think that these issues have to be explored more in the FCC's inquiry which should also examine the actual effects of changing that number. We have heard some statistics today about how many of these rural telephone companies have gotten into the cable business under the exemption.

Going through some of the records of the FCC, NTIA staff found that in the last 4 years, from 1986 through the beginning of 1990, 87 telephone companies got into the business of building new cable systems in their areas under the rural exemption.

You have to ask whether the cutoff 2,500 person limit is an arbitrary cutoff or whether the FCC actually picked the exact, right number when they set that limit.

Mr. WISE. I note with interest your noting that there are many definitions of "rural."

My own definition of "rural" used to be at least three potholes every mile and the necessity to carry your own set of jumper cables. But after driving I-395 out here, this apparently is the most bucolic freeway in the world. So my definition is no longer relevant.

Mr. Robinson, do you have something?

Mr. ROBINSON. We will be looking at that certainly as part of our cable television/telephone cross-ownership docket which should be—there should be a final decision in that sometime this spring, early this spring.

The current 2,500 standard, I believe, derives from the Census Bureau definition of what constitutes "rural." Quite frankly in the interest of simplicity I would prefer to have the FCC—and I think other people would prefer this as well—use a definition which is developed by experts in this area and widely agreed to.

I don't think it would be desirable for us to go out and devise our own special definition.

Mr. WISE. In addition to the rural exemption for telephone provision of cable service, the Cable Act also provides for a good cause exemption.

My question to you, Mr. Robinson, would be is this exemption widely used? Second, how hard is it to get? What kind of showing do you have to make to qualify?

Mr. ROBINSON. Mr. Chairman, with me this morning is Patrick Donovan from our Common Carrier Bureau, who is in charge of handling these matters and I've asked him. Under the rules that we follow, if you have 30 or less subscribers per route mile, you almost automatically qualify for the so-called good cause waiver.

My understanding is that we have not been deluged. In fact we have practically received almost no applications from telephone companies for good cause waivers.

Mr. WISE. Would you or Mr. Donovan have any subjective observations about why that is? And once again it's hard to define the negative but is it difficulty of making that application?

Mr. ROBINSON. Myself, I have no good sense as to why that would be the case. I would be more than happy, again, to provide that information to the subcommittee.

Mr. WISE. If you would.

Mr. ROBINSON. Yes.

[The information follows:]

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

OFFICE OF
THE CHAIRMAN

March 9, 1990

Honorable Robert Wise
Chairman, Subcommittee on Government Information,
Justice and Agriculture
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Questions arose in connection with my recent testimony regarding, first, the cost to municipalities of the engineering studies needed to support re-instituting cable television price regulation and, second, the small number of "good cause" waiver requests received from rural telephone companies seeking to provide cable television service in their telephone service area.

The Commission's Mass Media Bureau has informed me that the costs of the engineering studies needed to demonstrate the absence of cable television "effective competition" is from $10,000 to $25,000 --"somewhat above the $5,000 to $15,000 which I suggested.

The Commission's Second Report and Order in MM Docket 84-1296, 3 FCC Rcd 2617 (1988), para. 39, contains reference to a City of Dubuque comment indicating that the studies cost $25,000. I believe Dubuque actually sought to obtain bids for such a study from some of the higher class engineering consulting firms, so this is probably at the high end of the scale.

The rules in question were appealed and, in ACLU v. FCC, 823 F.2d 1554 (D.C. Cir. 1987), the court of appeals noted "with concern the substantial barrier the current waiver system may place on franchising authorities...[and that] this is an area the Commission would be well-advised to deem fruitful for further study on remand." ACLU at 47. On remand several changes were made to address this concern. First, the portion of the rules describing how the measurement process works was amended to delete the requirement for measurements taken during a "mobile run." As you know, the quality of reception that is possible can vary even within a few feet. The engineering rules, which are used for all kinds of purpose other than effective competition showings, were amended some years ago to require that measurements fro a "mobile run" be taken. This was intended to make it difficult for the party taking the measurements to search for "hot spots" to measure. It also meant that the party taking the measurements needed a truck equipped with a telescoping antenna and a strip chart recorder. Because not many firms have a need for such a truck, this significantly reduced the number of firms qualified to do the studies and increased the cost (along with the reliability) of the studies.

The mobile run requirement was deleted, for cable effective competition studies, in the Commission's *Second Report and Order* in *MM Docket 84-1296,* 3 FCC Rcd 2617, para. 41 (1988) in order to decrease the costs involved. As a consequence of this change, it should now be possible to undertake such a study without the need for a consulting firm with a monitoring truck. You should be aware, however, that both cable systems and cities may have to pay for these types of studies; the cities to rebut a *prima facie* showing of signal availability, and the systems to establish signal availability.

The second action taken by the Commission was to incorporate a cost shifting mechanism into the rules. That is, if a community has a study done and it demonstrates the absence of a signal, the cable system may be obliged the reimburse the community's engineering expenses. The community must pay the total cost if the signal is shown to be present. While this cost shifting mechanism is now part of the rules, you should be aware that Telecommunications, Inc., filed a reconsideration petition urging that the rule was beyond the agency's authority. Before the matter could be addressed, TCI withdrew its reconsideration petition.

The Commission's Common Carrier Bureau has indicated that they know of no single reason why the number of "good cause" waiver request has been low. Legislation enacted in 1984 which simplified the "rural exemption" process to facilitate operation of collocated cable and telephone systems may be a reason. Changes in Rural Telephone Administration lending policies may be a factor. So, too, may be the restrictions placed on "information service" activities by Bell companies under the 1982 AT&T antitrust consent decree.

I trust that this is responsive to the Subcommittee's needs. If additional information is needed, we would be pleased to provide it.

Sincerely,

K Robinson

Kenneth Robinson
Senior Legal Adviser to the
Chairman

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

August 22, 1990

IN REPLY REFER TO:

Audrey A. Bashkin, Esq.
Professional Staff Member
House Subcommittee of Government Information,
  Justice, and Agriculture
B-349-C Rayburn House Office Building
Washington, D.C. 20515

Dear Audrey:

I'm enclosing our response to questions Chairman Wise asked Ken Robinson during the hearing on February 7, 1990, regarding cable and other broadband communications service in rural America. These responses supplement Ken's letter to Chairman Wise of March 9, 1990.

Please let me know if you need any additional information to complete the hearing record.

Sincerely,

Linda Townsend Solheim
Director
Office of Legislative Affairs

Enclosure

Questions Submitted by Representative Robert Wise (D-W.VA)

Question 1: Does the Commission have any statistics on how many applications for basic cable rate regulation have actually been submitted to the FCC since the 1984 Cable Act, especially by rural authorities?

Answer: Yes. Eleven cities have filed requests for determinations that effective competition does not exist in their communities. One additional petition was filed by a cable operator seeking a determination that effective competition does exist in a community. This petition is not included in the figures given below.

Question 2: How many have been granted?

Answer: Four petitions have been granted and one was denied. Two cases are presently pending and four others were dismissed at the request of the relevant petitioners. These petitioners asked that their petitions be dismissed as moot because of agreements reached with their local cable operators.

Question 3: What is the cost to establish lack of effective competition, i.e., how easy is it for a rural area to establish that it qualifies to regulate basic cable rates under the current effective competition standard?

Answer: We estimate that it would cost between $8,000 and $12,000 for a small community to pay for a consulting engineer (including his equipment and transportation costs) as well as legal fees to establish a lack of effective competition in a certain area. This amount may be substantially reduced if a city has an engineer or an attorney on staff. Larger communities require more extensive measurements thereby incurring greater costs of approximately $25,000 to establish the lack of effective competition.

Question 4: How many applications for basic cable rate regulation were not filed because the cost was prohibitive?

Answer: We have no way to ascertain how many communities have not filed waiver requests due to cost. However, in three of the cases where a Commission determination has been made that effective competition does not exist, the relevant cities have been small. Specifically, Portola, California has a population of less than 2,000 people. The population of Sterling, Colorado is less than 11,400 people, and there are approximately 5,000 people in Hancock, Michigan.

Mr. **Wise**. Both the FCC and the NTIA are currently seeking public comments enabling you to decide whether some curbs need to be placed on cable rates, and if so, whether that curb should take the form of increased regulation, competition from telephone systems, or some combination.

Do you think the same conclusion will work equally well in rural America as in urban America? Either one of you may jump into that one.

Mr. **Robinson**. That's a very complicated question which we will be, again, looking at as part of the "effective competition" standard. And it's also an issue which has been somewhat fiercely debated on the Senate side where they are actively considering a number of different cable bills.

I really don't have any good sense whether a system of price regulation unique to rural America needs to be developed. I think arguments go both ways.

In the telephone world as the subcommittee heard this morning, in the State of Iowa there is no price regulation of a great majority of telephone companies in that State. Presumably since many of those were very small companies, very close to the customers, there appears less of a difficulty.

Whether that kind of circumstance also obtains in the case of small cable companies serving rural areas, I simply don't know.

We will be looking at a number of different options here as far as price regulation in the cable business and I wouldn't want to prejudge that kind of conclusion; though if the subcommittee or any of its witnesses have recommendations, we would be more than welcome to receive those.

Mr. **Wise**. Mr. Maher.

Mr. **Maher**. I share many of Mr. Robinson's views on this issue. The long-term solution to the rate question and the quality question and many others lies in making sure there are alternative sources of video programming available to as much of America as possible. That would include a viable home satellite dish industry or the advent of direct broadcast satellite as Mr. Robinson alluded to in his testimony.

As far as actual regulation of cable rates for rural areas, I think the "effective competition" docket will have to shed some light on possible differences between rural and urban areas.

Mr. **Wise**. Does either of you have a concern that States such as West Virginia as the most recent example are feeling the need to go out and craft their own form of regulation? And let's be candid with each other. It's gerrybuilt in that they're trying to do it within parameters that are very difficult to operate in. They will have to come forth—if nothing happens with the FCC's definitions of "effective competition," then the State of West Virginia will have to be submitting somewhat expensive engineering studies for limited areas of the State to provide regulation.

Does either of you have concern with the States feeling this need and going off in these directions or should we be looking at a more consistent approach to regulation in recognizing the need for States to be involved?

Mr. **Maher**. I think one of the major aspects of the jurisdictional question—that is, how authority should be allocated for regulation—is recognition of the fact that each State is different. West Virginia, as one of the most rural States in the East, still has many many geographic and economic differences from some of the sparsely populated Western States.

State regulation, which would recognize those specific differences and circumstances, could be the best approach; although even under such regulation, it could be difficult to get the kinds of studies that you, Mr. Chairman referred to.

On the other hand, the National Government, that is, the FCC, the executive branch, and Congress, have to take close, hard look at what the Nation's goals should be for both rural and urban areas in telecommunications. Indeed, our inquiry on the State of the Nation's telecommunications infrastructure is attempting to start that hard look.

There will have to be a balance between national concerns and the fact that every State is different.

Mr. WISE. Mr. Robinson, I would think this is going to be an increasing challenge for the FCC.

Mr. ROBINSON. Certainly. As Mr. Maher mentioned, you have a number of tradeoffs here. On the one hand, the United States is a continental country and the differences are tremendous. Washington State is not like West Virginia.

Any kind of regulatory system imposed by Washington is going to create certain pluses and minuses.

Certainly I don't think that the FCC wants to impose a system here.

On the other hand, local option has the potential of making it very difficult for the industry to operate and provide services.

Second, it has the potential of creating service disparities. The people in one State get one set of options; the people in another State don't get that option.

I think as part of our "effective competition" proceeding and in working with Congress on cable television legislation, we will be looking at that issue very, very carefully and seeing what kind of a balance has to be struck in this particular area to avoid the situation of, as Mr. Sikes has put it, "balkinizing the regulatory system," and on the other hand some sort of Federal imperialism which tells people "this is the way it's going to be, period."

We will be definitely looking at that issue very closely.

Mr. WISE. Many States, mine included, have vast rural areas covered by the Bell operating companies, not by the smaller independent companies.

Expanding rural exemption isn't going to permit them to offer cable service.

Would you all comment on allowing the Bell operating companies to offer cable service in rural America even without a wholesale removal of crossownership restrictions?

Mr. MAHER. That question raises a set of different legal issues. We have been talking this morning mostly about changes to the Cable Act of 1984, including the rural exemption and the "effective competition" standard.

The Bell companies are prohibited, under the AT&T consent decree that broke up the Bell System, from providing so-called information services. Judge Greena, who is overseeing that consent decree, has further interpreted that restriction to mean that the Bell companies can provide the conduit for certain types of information over their networks, but not the content.

No court has definitively ruled whether cable television really is an information service. If one looks at the words of the information service definition, the definition could fit rather well.

There certainly is a potential for Bell company participation in this general area. Their lawyers and the Justice Department must interpret exactly what the consent decree prohibits them from doing.

So far as I know the Bell companies have not been, and will not be, participating in providing cable service, certainly programming, under the terms of that decree.

Mr. **Robinson**. Bell companies do provide the transmission facilities on a so-called leaseback basis. In fact that is how the cable television system in the District of Columbia finally will be put into place. The transmission facilities will be constructed by C&P Telephone which will lease it back to the District Cablevision Co.

So it is permitted today but simply as part of a leaseback. As Bill Maher mentioned, it really is a judgment call by those companies whether that kind of enterprise is sufficiently attractive given the other constraints that they live under.

Mr. **Wise**. Mr. Maher brought up a whole set of issues that I think are important. But let's assume for a second that you hurdle those issues dealing with the divestiture.

Now we get down to the issue of the 2,500 person exemption.

As a matter of policy would either of you think it would be worthwhile to permit the Bells an exception to provide cable to those areas which by ordinary definition of the Bell operating system they, of course, serve an area much larger than 2,500 people in any State? But would you as a matter of policy permit them to carve out an area and to serve only that area?

Mr. **Maher**. It's probably wisest from a policy perspective not to look at the identity of the service provider, whether it's an independent telephone company, including one of the large independents like GTE, or a Bell company. Instead, one must look at the purpose of the exemption and how many additional homes would be getting cable service under it. I would focus more on what the threshold number should be: Whether 2,500, 5,000, up to 20,000 is the best one. Policymakers should focus on the identity of who would be getting cable service rather than which telephone company might be providing service. The rural exemption is not a guarantee or an order to a phone company to go in. It's still up to a telephone company to make that economic decision.

Policymakers should look at how viewers are—how they would benefit the most.

Mr. **Wise**. Mr. Robinson.

Mr. **Robinson**. I would agree very much with that. I would be loathe to have a system which, in effect, could potentially penalize people. If you lived in an area which was served by Southwestern Bell, you could not get cable television. If you lived right across the street in an area served by Panhandle Telephone Cooperative, you could. Just that kind of accident of geography.

I don't think that those kinds of costs should be visited upon customers, particularly not in rural areas.

Mr. WISE. The argument was made in a previous statement by one of the former witnesses, I believe it was Mr. Bresnan, that in effect there is competition available even within a franchised area because there's nothing to prevent the franchiser from permitting a competing service to provide cable service. How realistic is that particularly within a rural area?

Mr. ROBINSON. It's very hard to say. I think if you look at most rural areas, you will see a kind of core, semiurban situation and then a large, much less populated surrounding area.

Within the kind of core, semiurban area, it could be quite feasible to have competition; perhaps not competing cable systems, perhaps an over-the-air multipoint, multimedia microwave distribution system, such as we have in a small number of major cities in this country.

I think when you get down to household densities really below 30 per square mile, in the near term, certainly for the next 5 years, it's not very realistic.

Mr. WISE. To have competition? Two competing cable companies?

Mr. ROBINSON. It's very difficult to see that.

Mr. WISE. Mr. Maher.

Mr. MAHER. I agree very much with that.

Mr. WISE. If crossownership restrictions are removed, how can we be sure that telephone subscribers are not subsidizing cable operations?

Mr. MAHER. Well, that's a classic regulatory problem that both the FCC and the State regulators have addressed a number of times when regulated telephone companies enter unregulated markets.

For example, many telephone companies now sell customer premise equipment like handsets or PBX's in unregulated markets. It's a question of how to devise safeguards between telephone companies regulated and unregulated activities. Currently the FCC has a rather comprehensive set of cost allocation requirements, essentially very strict accounting standards, that separate accounts for competitive or unregulated ventures, like cable television, from regulated telephone service.

Those telephone companies are subject to annual reporting requirements for the FCC as well as periodic visits by FCC auditors.

Many of the States have very similar kinds of requirements.

Mr. Chairman, your question, is close to the types of regulatory activities that both the States and the FCC have performed for years.

Mr. ROBINSON. I would agree with that.

Mr. WISE. Mr. Robinson, the FCC is under tight budgetary and staffing constraints just about like everything else in the Federal Government. Even if a regulatory structure to prevent cross-subsidization were put into place, how would you be able to enforce it?

Mr. ROBINSON. The FCC only regulates a small part of the overall telephone business. The kind of backbone regulation of the telephone industry in this country is undertaken at the State level.

Mr. WISE. So it would be going to the States?

Mr. ROBINSON. The State regulatory agencies in some instances, notably California and New York, are actually significantly larger, personnel-wise than the FCC.

If you were to add the regulatory resources available to the FCC with those of certainly the principal States in this country, I think you would see that there are quite substantial regulatory resources devoted to monitoring cost allocation, pricing, and other commercial decisions of the telephone industry.

Simply looking at the FCC you might get a somewhat skewed perspective on regulation.

I've not yet met anyone in the telephone business who felt that the FCC was not adequately regulating them or that our activities plus those of the States were insufficient.

Mr. WISE. What you're suggesting then, as I understand it, is that most likely the bulk of the regulation dealing with cross-subsidization would fall upon the State public service commissions. Is that correct?

Mr. ROBINSON. The State public service commissions would be for most purposes, I would expect, the first line of defense in this case. And I have great confidence in their ability to maintain that line of defense. I think they've got a good record in that regard.

Mr. WISE. Would you have any concern, however, and I happen to share that with you but I also coming from State government know that both consumer advocate offices and even State public service commission auditing staffs tend to be kept pretty lean out of budget constraints. This seems to me to be a very complex, sophisticated area that we might be getting into.

Would you have any concerns about that?

That's question No. 1. And quickly piggyback on that: If you're dealing with a regional Bell operating company, would there be some concern with having a different method of examination of cross-subsidization with every State but yet a regional company?

Of course we do that already in some regards anyhow.

Mr. ROBINSON. Obviously it is a new enterprise. It is a complicated undertaking but it's not that new or that complicated relative to the lot of the existing activities of the State public utility commissions. So I personally happen to think that most of the State regulators, certainly in the larger States in this country, are quite up to any potential challenges in that regard.

As to the regulation of the Bell operating companies or any of the other very large telephone company holding companies, GTE, Continental, United, certainly in some areas of the country, most notably New England, the State regulators have pooled their resources and they have a New England conference of regulators which endeavors to look at the holding company in toto.

I think that kind of an approach is a promising one and the State regulators do regularly meet. Their staffs are in communication with each other just as the Common Carrier Bureau staff at the FCC and its counterparts at the State level are in constant communication.

In fact this will be in all likelihood one of the topics which we will be taking up again in one of Mr. Sikes' initiatives, and that is the first-ever State/Federal regulatory summit which takes place the end of April here in Washington, where the chairpersons of all the State regulatory agencies and the FCC members will actually for the first time ever get together and discuss ways in which they can do their job and fulfill their shared responsibilities better and more effectively.

Mr. **Wise**. Mr. Maher.

Mr. **Maher**. Just a short comment.

The FCC and the State regulatory commissions devote resources where there are problems or potential problems. I think that's important.

If there is a sudden upswing of telephone company participation in this area, whether because of an expanded rural exemption or for some other reason, I think that the message would come very quickly to the regulatory staffs of the FCC and the States that this is something that bears close attention. They will deploy their limited resources to meet that challenge.

Mr. **Wise**. Now, let me ask you a question dealing with development. There's been much testimony here today at every level from every party about what is adequate. Some are suggesting that fiber optic is really not necessary; that you can do much of the same work with coaxial and copper wire.

Many of us from rural areas are interested in trying to develop new job opportunities with advanced telecommunications; telemarketing, data processing, that type of thing.

My question to you is, what is the reality; whether we should be looking for fiber optic cable and at an expanded rate than perhaps what ordinarily might go down with the present system or whether, indeed, as has been suggested that coaxial cable and existing technology is adequate to handle the job?

I agree and submit that it's adequate to handle much of what is being done today and perhaps to do some of the sophisticated communications, for instance, with hospitals in transmitting medical information and so on.

I question, though, where we're going to be 10 years from now in rural areas without application of fiber optic or at least increased application of it.

Would you all comment on that?

Mr. **Maher**. A very important goal is finding the facts. NTIA's notice of inquiry in the infrastructure study that I have referred to is 99 pages of questions on precisely these kinds of issues: What are the relative costs and benefits of trying to deploy new technologies, whether they're fiber optics or new types of mobile or cellular communications technologies NTIA's study will attempt to determine the best pace for development both in rural and urban areas.

One particular rural area, for example, could install fiber optics at a local business center and attract, perhaps, a telemarketing concern to locate there. However, one has to ask on a national level whether such a development would mean that there would be a population shift or a job shift from some other rural area? Perhaps that would not be best for the country as a whole.

I think the choices for infrastructure development are relatively clear. It's just hard to balance them. On the one hand you can certainly leave the matter to consumers of telecommunications services—and by that I mean businesses as well as individuals and what they demand from a telecommunications system. And if there is already in place in a rural area a business that needs more modern telecommunications and is willing to pay for it, then development can occur that way.

On the other hand, there's a real question as to whether some sort of government led jump start is needed somehow and whether that should be a goal of a town or a State that is trying to plan its economic development.

The academic literature is very mixed on the role of telecommunications, and specifically the deployment of fiber optics, in economic development.

It may be that a rather rich sets of technological options, as Mr. Kimmelman was discussing, could be the best thing for the country as a whole.

It will be very difficult to balance these concerns and come up with a national policy to fit each rural area.

Mr. WISE. Mr. Robinson.

Mr. ROBINSON. I would say this: What Mr. Maher has said I believe would most likely be the official FCC response.

On a personal basis, I must say that I sympathize a great deal with Congressman English and in a sense I recoil from being told that the people who live in rural areas should, as one of the witnesses put it, have a patchwork communications system.

These systems are not the same—the current systems. The comparison between twisted pair and fiber optics is unbelievable. In fact I brought samples with me, which I'd be pleased to show you, showing you what a current twisted pair looks like compared to the fiber optic. You get tremendous capabilities with fiber optics.

I personally do not believe that the costs of providing this kind of very feature rich and advanced communications service to rural areas are even remotely close to many of the estimates which have been advanced.

Mr. WISE. Could you repeat that?

Mr. ROBINSON. I do not believe that the costs are even remotely close to the estimates.

The current investment in the United States in telecommunications apparatus, total national investment is $672 billion.

The total investment of the regulated industry—these are Department of Commerce figures—$440 million.

We have heard estimates here that it would be $1 trillion. That is to me intuitively a flawed number.

There are only around 96 to 100 million telephone subscribers in the country.

The experience in this industry is rapidly declining in costs, 20 percent per year compounded.

The cost of electronics drops like a stone.

So I would not personally believe that it would cost a great deal to put into place ubiquitously in the United States the kind of feature-rich and enhanced infrastructure that Congressman English and others have mentioned.

That's my own personal view. That's not necessarily one which the five members of the FCC would necessarily vote to sustain.

Mr. WISE. I appreciate that.

The one area we've not gone into and let me just ask whether you will be covering it in your inquiries—and I'm going to be quite honest with you, Mr. Maher, I tried to read your 99 pages and I couldn't get through it. I'll do better. But I tried on a plane the other day and the trip was just too short.

Mr. **Maher**. The infrastructure report will be more interesting than the questions, so we'll wait for the report.

Mr. **Wise**. But your inquiry obviously is the part I did not get to. Does it concern itself with the issues that we've not discussed today basically of vertical and horizontal integration, the increasing monopoly—seemingly increasing monopoly control of cable television?

Mr. **Maher**. The infrastructure study doesn't raise that particular set of questions, although NTIA will file comments in the FCC's proceeding on this topic because it specifically raised those market structure questions for the cable industry. NTIA hopes to be supplying information and policy suggestions to the FCC in that proceeding.

Mr. **Wise**. Mr. Robinson.

Mr. **Robinson**. Those are topics which Mr. Sikes when he testified in front of the Senate stressed. We certainly will be looking at them; the degree of vertical integration and what the effect of vertical integration is on the availability of programs to would-be competitors, as well as the effects of concentration levels, ownership concentration here. Those will be figured very prominently as part of the FCC's study.

Mr. **Wise**. As I say, that is not a subject for today. I would just note some concern. I subscribe to a rural cable service that is not owned by anyone yet according to the operator. There are, I think, two brothers that operate it with one secretary. They're out under houses and on the road all the time. At least if I have a complaint, I know whom to get a hold of. I have a feeling that one day when they're probably acquired and I have to call ATC or TCI, they may not be as interested at Time, Inc. headquarters about talking to me as these two fellows are.

So that's a growing concern and subject, as I say, perhaps, for another day and I know other committees are also looking into it.

I want to thank both of you very, very much. You've brought a lot to it. The reason I had asked for you to be at the end is because I wanted to have a chance for the other witnesses to testify and so that you could frame your responses in regard to them. I appreciate the time you've spent.

This will conclude this hearing.

[Whereupon, at 1 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

THE PREPARED STATEMENT OF DAVID HERRON, MANAGER, WEST CAROLINA RURAL TELEPHONE COOPERATIVE

TESTIMONY OF

DAVID HERRON, MANAGER

WEST CAROLINA RURAL TELEPHONE COOPERATIVE

ON BEHALF OF THE

NATIONAL TELEPHONE COOPERATIVE ASSOCIATION

BEFORE THE

HOUSE GOVERNMENT OPERATIONS SUBCOMMITTEE

ON INFORMATION, JUSTICE AND AGRICULTURE

October 23, 1989
Washington, D. C.

Mr. Chairman, distinguished members of the committee, my name is David Herron and I am the General Manager of West Carolina Rural Telephone Cooperative in Abbeville, South Carolina. In addition to West Carolina, today, I am also representing the National Telephone Cooperative Association (NTCA). I appreciate the opportunity to present my testimony.

West Carolina serves approximately 7,600 customers throughout the rural confines of western South Carolina. Our subscriber density is only 7 per mile of telephone wire which is extremely low when compared to the rest of the telephone industry. Thus, you can understand the need and continued importance of rural oriented systems such as West Carolina.

The topic on the agenda is bringing the Information Age to rural America, which is of great importance, not only to NTCA members and their subscribers, but to all of rural America. Generally, it can be said that all NTCA members are already involved with rural development and the advent of new telecommunications technology as their primary lending source, the Rural Electrification Administration's (REA) Telephone Loan Program is one of the country's first and finest examples of a successful rural development program and provides the technical expertise required to deploy advanced telecommunications technologies in rural America. However, many NTCA members are beginning to look into additional forms of rural development as the local economy of their service areas continues to falter. Meanwhile, the central focus of all NTCA members must and will always be to utilize all available resources in making affordable telephone service universally available to our rural customers. And, the quality of such service must always equal that which is available to urban residents. In seeking this goal, our efforts can and will spark rural development which helps to ensure America's rural sector remains a viable force in improving the country's overall economic health and that rural Americans have the same access to jobs, education and health care that are available in our nation's urban communities.

Prior to working for West Carolina in 1986, I had spent 16 years employed by REA. I joined REA immediately following graduation at the University of Tennessee with a degree in Electrical Engineering. After training in Kentucky and Tennessee, I was transferred to Washington, D. C. where I worked as a staff engineer in the Southeast Area Telephone Engineering Division. I also spent several years as a field engineer in Alabama, Georgia, Florida, Puerto Rico and South Carolina.

When I first came to REA, they were considered leaders in the industry. REA had technical staff that were viewed as experts in their field. The staff was reknown for their innovative design techniques and standards which were essential for REA borrowers to be able to design and build telephone systems in rural areas which consisted of so few customers per mile and very long loops. It was a different world trying to provide these services in rural areas as opposed to urban areas. Innovative techniques had to be used in order to provide these much needed services in rural areas at affordable rates. Through the development of performance standards and specifications, REA opened the door for the competitive market to develop the kinds of equipment and materials necessary to accomplish their goal. They became recognized nationwide and their standards and construction methods are used throughout the world.

As the industry kept growing, it also became more complicated with the advent of toll settlements, divestiture, and deregulation. REA answered the call by creating a telecommunications management division which stayed on top of all of the changes and issues taking place in the industry. This division acted as a consultant to its borrowers by providing education and assistance as to how these industry changes could affect our rural companies and cooperatives. They, too, became well respected in the industry and were included on industry task forces to develop settlement arrangements and resolve other issues which would be mutually satisfactory to the big companies as well as the small companies and would assure the integrity and preservation of universal service throughout rural America.

As a field engineer with REA, I was part of a team consisting of an engineer, an operations and management specialist, and an accountant supported by an expert and well-respected staff in Washington. Part of our function was to work with the borrowers and their consultants to develop forecasts, designs, and budgets to determine the loan requirements. Another function of the field staff was to ensure the security of the government's investment and the well-being of our small borrowers. This function served to enhance enforcement of the operations, maintenance, engineering and construction procedures developed by REA, as well as provide advice and assistance to the borrowers.

There are still a lot of small companies who provide service in the rural areas who cannot afford to have a staff capable of keeping up with all of the changes going on in the industry; capable of having a staff of financial advisors in order that they may make the best decisions to keep the company and the government's loan security sound; capable of developing operations and management procedures; capable of developing performance standards, designs and construction methods to make it economically feasible to provide the most up-to-date telecommunications services in the rural areas, or to develop standards for new materials and equipment, and to test and evaluate these materials to see that they will hold up to the true test of providing uninterrupted telephone service in the most difficult to serve rural areas.

Although a lot of the education and up-to-date information on the current issues are being provided by some of the national trade associations, not all companies belong to the trade associations and not all companies belong to the same trade association. The common bond that REA has provided through the years has been invaluable. Another aspect which is hard to define is the clout that is associated with the United States government's development and enforcement of standards and procedures. People listen to the government and when a manufacturer's product does not meet up to expectations, that manufacturer will do everything possible to resolve any technical problem for fear of being removed from the government's approved list.

Rural America has increasingly begun looking toward new ways of providing goods and services as a means of expanding their well-being and fortifying the rural economy. In this process of fostering rural development, the manufacturing and business community is looking to the rural territories for expansion. However, the manufacturing and business subscribers are increasingly demanding modern and advanced telecommunications. The ability of the rural network to meet the needs of corporate America and to maintain technical parity with the national network is imperative if business expansion into rural America is to prosper.

The necessary technological changes demanded by the Intelligent Network must be met by rural independent telephone companies as well as the large urban local exchange carriers. But the cost of bringing the Intelligent Network to rural America is high, and many rural independents are faced with the real and justifiable threat of not being able to keep up with technology.

However, from a technical perspective, many independent telephone companies are well positioned for introduction of the Intelligent Network because rural telephony has been able, with the assistance of the Rural Electrification Administration telephone loan programs, to modernize antiquated switching equipment to digital switching, a basic element of the Intelligent Network. The mandatory network enhancements necessary for complete deployment of the Intelligent Network will increase and it remains imperative that adequate and effective REA and RTB loan programs are available for the next era of telecommunications network upgrade.

Additionally, steps should be taken by Congress to ensure that REA maintain its vital Engineering and Standards Division. This technical assistance available to borrowers helps to ensure that they receive the advice they need from the purchase of equipment to actual implementation of technology. Aside from quickening the process of bringing the Information Age to rural America, these standards ensure that the government is making vital investments in rural telecommunications. The existing REA Telephone and Rural Telephone Bank lending programs are available to implement most of these technologies.

It may come as a suprise to many that the REA Telephone Loan Program does not exist simply to provide loans for telephone lines alone. Loans can include funds for developing or acquiring physical plant such as buildings, computers and other tools, vehicles and additional operating equipment. In addition, loans are not simply to fund projects in yet unserved areas. REA Telephone Loans are allowed and indeed encouraged for purposes of upgrading existing service areas. This would include installing new fiber optic lines, advance switches guaranteeing equal access, and should include cellular service encouraging general business competition. These points on upgrading are especially critical because estimates indicate that at the current rate of upgrading, it may be more than two decades before all rural areas are able to fully compete technologically with urban areas.

Simply ensuring the existence of the REA Telephone Loan Program, however, will not guarantee borrower success. Improving the loan application and approval process is an equally important issue.

Now that I am on the other side of the fence as a manager of a telephone cooperative, I see the continued need for a program such as the REA if we are going to accomplish our goals of rural economic development. I recommend in any rural development legislation that wording be made a part of the legislation to provide the same type of follow-up and assistance and internal auditing controls that has made the REA telephone loan programs so successful to date.

I am hopeful my thoughts as well as those of the other participants in these hearings will assist you in developing legislation that will extend this historic commitment for many years to come.

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